SPRING CONFERENCE SUMMARY

NATIONAL ROUNDTABLE OF STATE POLLUTION PREVENTION PROGRAMS

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APRIL 22-23, 1992
RALEIGH, NORTH CAROLINA

Concern and criticism was voiced about the use of disposable eating utensils and single serving containers at the recent Roundtable Conference. In response: (1) N.C. law prohibits the use of breakable utensils pool side, and (2) single serving items were selected in the interest of time during the working lunch.

I sincerely apologize if this offended anyone.

The GOOD NEWS is that our presence at the Mission Valley Inn caused them to focus on their current recycling activities, or lack thereof. They have since been in contact with our Office about the implementation of a facility-wide recycling plan. THANKS TO EACH OF YOU, Raleigh, North Carolina, will be a little cleaner.

Stephanie Richardson, Manager
N. C. Pollution Prevention Program

May 1992

Compiled and edited by
the Water Resources Research Institute of The University of North Carolina

for the Pollution Prevention Program, Office of Waste Reduction
North Carolina Department of Environment, Health, and Natural Resources

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WELCOME

William W. Cobey, Jr.
North Carolina Secretary
of Environment, Health, and Natural Resources

In April 1985, my predecessor Thomas Rhodes made the welcoming remarks at the first meeting of the National Roundtable of State Pollution Prevention Programs. It is my distinct pleasure and honor to give the welcoming remarks for the seventh annual meeting of this Roundtable.

You have really come a long way. In the first meeting there was just a handful of people from a few states. The meeting was so small it was held in a conference room of a state office building. Look at you now. You've outgrown conference rooms in state and even federal office buildings (you know, those are bigger). You now require facilities for nearly 150 people.

Even though you've grown, by coming back to North Carolina, you decided to retain some of the flavor of the original Roundtable meeting. I'm referring to Roger Schecter's being scheduled to deliver the keynote address (and the pig pickin' scheduled tonight).

I look with a great deal of pride on the role that the North Carolina Pollution Prevention Program has played in the waste reduction area. Through the vision of Roger Schecter, our program got an early start. Our first statewide symposium on pollution prevention was held in 1982. It was titled "Making Pollution Prevention Pay: Ecology with Economy as a Policy." The title could be applied in today's climate also as industry looks for solutions that are both economically and environmentally acceptable. Perhaps today we would title it "Pollution Prevention: Economic and Environmental Incentives for Industry."

The title of that first symposium contains words that indicate the importance of the pollution prevention philosophy. Wording that makes it viable for both the short and the long term. Wording that should make it a philosophy that is easy to sell to both industrial and governmental leaders. It's been my personal experience that even in times of tight money and even though North Carolina Pollution Prevention is not that big a program, we have been able to secure additional resources. I hope that you're finding that kind of success.

We all know that in today's financial climate industries are looking for ways to increase profit. We're also aware that industry leaders realize the importance of having a good environmental record. That's the beauty of pollution prevention. It allows to have your cake and to eat it too. It allows for improved profitability, improved efficiency, and improved environmental record. If this were not so, would it be so closely associated with the Total Quality Management concept that we're all hearing about and many of us are trying to apply.

My challenge to you as you meet and discuss pollution prevention technology and policy, is to do it with open minds. Because minds are like parachutes: They only work when

they're open. Keep your minds open to new approaches. Openly discuss your failures as well as your successes because many of our best lessons are learned from our failures.

I challenge you not to get bogged down in definitions. Does it really matter if you call it "waste reduction," "pollution prevention," or "waste minimization"? Does it matter if your program is multimedia like North Carolina or single medium like South Carolina? Does it matter if your program is nonregulatory based or regulatory based? Does it matter if your program provides technical assistance or just dictate policy. Think about it.

Isn't what really matters the fact that you're out there to improve the environment and industrial economy by reducing waste generation? Isn't what really matters the fact that you've all come together in this forum to exchange ideas?

I challenge you to go through this conference not as competitors from different programs or different program types but as one team and team players. Further, for those of you who have been in pollution prevention for a while I challenge you to not forget the zeal you had when you first discovered the pollution prevention philosophy. Please maintain that zeal and realize that everyday someone else discovers this philosophy. Be there for the newcomers. Be their mentors and teachers. For by becoming teachers and mentors you can spread your effectiveness and knowledge into areas that you as an individual can't possibly personally touch.

The National Roundtable of State Pollution Prevention Programs is like a beacon in the night. It provides light to guide both industry and government into the safe harbor of environmental and economic good health. I can't think of a more exciting thing to be involved in today. I applaud you for being involved, and I hope that you will carry a great deal away from this conference. And, I hope that you will find time to enjoy our state and its capital city. I thank you personally and on behalf of our governor and all our citizens for all the efforts you make to make this world a better place for all of us to live in.

The Role of the National Roundtable in the U.S. Pollution Prevention Movement

*Roger N. Schecter**
Founder, National Roundtable
of State Pollution Prevention Programs

I am somewhat stunned by the growth of the National Roundtable, and I was overwhelmed as I went back through my personal files and looked at the accomplishments of the members of this group. Today, I want to provide a perspective on what has happened over the last twenty years relative to waste reduction vs end-of-pipe treatment; overview the impressive order-of-magnitude shifts which have occurred in the last six years, and particularly the last two years; and summarize the role this group, the National Roundtable, has played at the national and state levels.

Development of National Pollution Prevention Policy

In 1970, President Nixon signed a reorganization plan to bring together disparate environmental programs under one roof. The purpose of establishing the U.S. Environmental Protection Agency (EPA) was to introduce a "broad systems approach [that] would give unique direction to our war on pollution" by treating "air pollution, water pollution, and solid wastes as different forms [of] a single problem." The executive order went on to say that the reason for organizing these programs into the EPA was to deal with multimedia, cross-residuals management.

During 1971 through 1976 EPA was organized around separate units authorized by separate statutes based on national standards for end-of-pipe pollution control: the Clean Air Act and the Clean Water Act. Those programs prescribed best control technologies, best achievable technology, best available technology, technology, technology, technology -- all the end-of-pipe controls and the commands that went with them.

In 1976, after a series of four meetings nationwide which 70 people attended (I think there are over 200 people here today!), EPA issued a position statement describing the agency's six-point "preferred waste management strategy" ranging in order of priority from "source reduction" to ultimate disposal, with all the things in-between. The policy statement, published in the Federal Register, said that while the six-point strategy applied primarily to hazardous waste (because this was preliminary to the Resource Conservation and Recovery Act), this concept and waste management hierarchy was equally appropriate to all waste forms. However, unsupported by statute, or policy, or money, the agency was unable to follow the hierarchy espoused in that 1976 statement.

Fast forward to 1983. A handful of states separately established waste reduction technical assistance programs. That handful of states got organized and later became the National Roundtable.

In 1984, the Hazardous and Solid Waste Amendments to RCRA stated that the national policy was "whenever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible" and required EPA to submit to Congress a report assessing the feasibility of setting standards for waste minimization and recommending legislative changes to implement waste minimization policy.

So far we've gone from 1970 to 1984, still just exploring the concept of waste reduction. By this time, EPA's allocation of resources to waste reduction was 1/2 person and about $200,000.

In 1985, the Roundtable had its first meeting, with 20 some people in attendance, representing operational state pollution prevention programs and state programs just in the formative stages.

In 1986, EPA reported to Congress concluding that mandatory standards for waste minimization were not feasible, and that more information was needed. "We'll get back to you in 1990," they said. The EPA report said that in the interim, a "core waste minimization program" would be established for RCRA hazardous waste, but recommended that "waste minimization must be implemented . . . more broadly throughout all of EPA's pollution control programs." So, we're up to 1986 and EPA is still saying "Yep, that's what we ought to do."

Also in 1986, the Congressional Office of Technology Assessment's report on implementation of national policy was critical of EPA's historical focus on pollution control and lack of effort in waste reduction. The report highlighted state waste reduction program efforts and cited the need for a multimedia focus within EPA.

Later that year, EPA initiated a Core program in the Office of Solid Waste (OSW) to develop policy and technical information transfer and to draft the required 1990 Report to Congress (resources for the effort were about $300,000 and two people). Also the Office of Research and Development (ORD) supported three cooperative agreements with states for waste minimization worth about $250,000.

In 1987, the EPA Assistant Administrator for Solid Waste and Emergency Response offered a unique opportunity for one of the Roundtable members to actually visit the Land of Oz to work with EPA as an outside specialist to help develop and move a multi-media program forward. After I got there, the Office of Technology Assessment released another report, "Progress Report on Waste Reduction," criticizing EPA's waste reduction effort as too broadly defined, focusing on RCRA waste only, and lacking real commitment. The Office of Solid Waste then formed the Waste Minimization staff.

There were two major bills and maybe four others introduced in Congress in 1987 related to waste reduction. One of them (the Hazardous Waste Reduction Act) went on to later become the Pollution Prevention Act of 1990. And, there was even one called the Preventative Environmental Protection and Waste Reduction Act (obviously a full coverage bill!). These bills were efforts to force a formal institutional response in EPA and once-and-for-all to set policy, rules, and strategies in legislation. The bills varied in how they would do that and ranged in appropriations from $5 million to $18 million. Most of the money in each of the bills was to support state programs.

Meanwhile, EPA's Core program and yours truly were working on developing policy and strategy, clarifying definition, preparing a national data base for the report to Congress and drafting technical publications. The office had a budget of about $400,000. We found an unspent appropriation of $3 million in RCRA and "reprogrammed" it for waste minimization, creating the RCRA Integrated Training (RITTA) Grants. We launched the clearinghouse idea, and got a requirement for state waste minimization programs into the Hazardous Waste Capacity Assurance Planning process.

In 1988, Congress appropriated $500,000 to EPA specifically to establish a "formal" waste reduction program for "multimedia hazardous waste source reduction and recycling" with "high visibility in the Agency and management attention across all relevant media programs." There was also a $4 million appropriation for grants to states for "waste reduction technical assistance programs and for EPA to establish and operate a technical information clearinghouse." Late that year, EPA organized a pollution prevention division in the Office of Planning, Policy and Evaluation, initiated the forerunner of the current information clearinghouse, initiated state grants, and began outreach to EPA single media programs and regions. One of the results of that activity was a model program supported by Region IV, the Waste Reduction Resource Center in North Carolina.

In January 1989, EPA's draft Pollution Prevention Policy Statement was published in the Federal Register. It recommended a multimedia approach and pollution prevention through source reduction and environmentally sound recycling, and stated the Agency's primary goals were to forge a partnership supporting state programs and to further the information clearinghouse.

In November 1990, the Pollution Prevention Act of 1990 was passed. It set up the hierarchy (earlier stated in 1976) as clear national policy, advocated a federal/state partnership in pollution prevention and set up state grants, adopted a definition that equates pollution prevention with source reduction (excluding recycling), and formalized the information clearinghouse.

Also in November 1990, EPA delivered its Report to Congress on Pollution Prevention Strategy. The report went far beyond the 1986 report and recommended many new initiatives. EPA also supported investing in state programs to the tune of $7 million in

1990 and $4.5 million in 1991. A senior-level group was recently formed reporting directly to the Administrator, the Pollution Prevention Policy Staff.

That brings us up to the present status of the pollution prevention evolution in the United States. Now, I'd like to look at the role of the Roundtable in establishing that national agenda.

The Role of the National Roundtable of Pollution Prevention Programs

Remember that those early state programs started in a vacuum. All we had was an idea and a commitment to make it work. At that first Roundtable in April 1985, there were four active state programs and eight programs in the planning and development stages. Those twelve programs were in 10 states. Active programs had one-half to two people on the staff and annual budgets of $100,000 to $150,000. There was no state legislation regarding waste reduction. I remember that at the 1985 Roundtable, we were mainly trying to figure out how to make the programs work. We all had common problems: liability of waste exchanges; lack of funding, technology transfer resources, publications, and attention; and an uncertain relationship with the federal government and other state programs.

However, with the Roundtable we had a group that was committed to working with Congress on a national agenda and a group that could represent the movement to the EPA. The Roundtable worked very closely with the Office of Solid Waste on the 1986 waste minimization report to Congress. In that report was the first published reference to an EPA-state partnership. The report said that EPA's Core Waste Minimization Program "will launch a strong technical assistance and information transfer program through the states to promote voluntary waste minimization in industry." In addition, the Roundtable represented state programs in early key agency planning and policy conferences at Woods Hole and Coolfront, VA. The Roundtable's chairman served as a special assistant with the Agency during that period of change when pollution prevention policy and programs were being formulated. Many Roundtable members were serving on committees, reviewing draft documents and commenting on ideas and plans. Through the Roundtable's influence, the RITTA Grants were developed. Roundtable meetings every six months provided a constant status check and a forum for moving pollution prevention forward.

The Roundtable also played a very important role in convincing congressional staffs and state delegations that there was a constituency for pollution prevention and for funding these activities at the state level. Our efforts generated support for the proposed 1987 Hazardous Waste Reduction Act, which became the Pollution Prevention Act of 1990.

However, I believe that there was one major turning point in achieving a national pollution prevention program for which the Roundtable was singularly responsible: the FY 1988 congressional appropriation to EPA specifically for pollution prevention activities. We managed to turn that corner because of a Roundtable telephone "blitzkrieg" to members of Congress when the House and Senate versions of the appropriations bill went to a compromise budget committee. That year Congress appropriated "$500,000 and six FTE for

multimedia hazardous waste source reduction and recycling and $4,000,000 for incentive grants to States to establish and expand waste reduction technical assistance programs and for EPA to establish and operate a technical information clearinghouse."

> As I noted earlier, that appropriations bill stated:
> *Several States have demonstrated the cost effectiveness of technical assistance programs aimed at helping small and medium sized businesses reduce hazardous waste generation. The Environmental Protection Agency, however, has virtually ignored this promising area and Federal leadership and coordination is long overdue. The conference agreement adds staff and funds to establish a formal hazardous waste reduction program within EPA, in addition to State grants and an information clearinghouse. Recognizing that the technical expertise in EPA resides in the office of solid waste, the conferees intend that this program receive high visibility in the Agency and management attention across all relevant media programs.*

Since that success, Roundtable efforts helped secure more than $15 million in federal grants to state and local programs in the last three years and have helped support and achieve major accomplishments within the Agency.

So, the Roundtable's achievements have been not only in promoting state programs but also in pushing the national agenda forward on pollution prevention and real change. From the small beginnings in 1985, we reached 1988 with 21 active programs and 22 programs planned or under development. Those 43 programs in 35 states had staff averaging two and one-half people and annual budgets of $250,000 to $300,000. Individual Roundtable members had been active in their states as well because by 1988, about fifty percent of the states had legislation relating to waste reduction. Three years later, in 1991, state pollution prevention programs numbered 36, with 10 under development. These programs in 36 states averaged five staff persons and an annual budget of $350,000 to $400,000. And, more than sixty percent of the states had passed waste reduction legislation.

Wishes Granted

With the passage of the Pollution Prevention Act of 1990, we might say that the genie has granted us our wishes.

* We have a clear statement of legislative policy and a national mandate for pollution prevention.

* We have consistent state funding and resources from EPA as well as support from other federal agencies.

* We have congressional and state legislative support.

* We have a functioning local/state/national network of programs.

* We have uniform state and national data bases.

* We have new EPA initiatives.

The Challenge Ahead

Obviously, the movement has matured. It is no longer in its infancy but is entering adolescence. We all know how difficult adolescence is, so now is no time to relax. As a major player in achieving success in the pollution prevention movement, the Roundtable must itself mature or be left arguing the details of past arguments and differences of opinion. As in adolescence, the change will not be easy but it is necessary. Wishes granted must now be turned into the realities of change.

Our pollution prevention movement has shifted from primarily developing state programs to a more national focus. The Roundtable of State Pollution Prevention Programs needs to regroup to be the voice of the movement nationally and to renew the partnership through which past successes have been achieved. My heart and a good part of my soul has been with you over the last seven years, and my heart is with you now as you meet the challenge of the next seven years.

** Currently Director of the North Carolina Division of Coastal Management, Roger Schecter was the first director of the North Carolina Pollution Prevention Pays Program. In 1987-88, Schecter was special assistant to the EPA for developing EPA's waste reduction program.*

WRITAR UPDATE

Bob Style

In August 1990 WRITAR received a grant from the U.S. EPA Office of Pollution Prevention to enable WRITAR to:

> Establish and direct the National Roundtable of State Waste Reduction (Pollution Prevention) programs. The association will perform a coordinating function for technical and policy information exchange between state programs which currently assist waste generators.

Although this grant was originally intended to run only one year, WRITAR applied for and was given an amendment to the grant providing additional monies and extending the grant period for another year. This Office of Pollution Prevention grant is scheduled to expire September 30, 1992.

Since receiving this grant, WRITAR has been actively pursuing the intent of the grant by acting as the Executive Director of the Roundtable. In this capacity, WRITAR staff have put on conferences, assisted members in setting up an Advisory Board and Work Group system, formally represented the Roundtable on various boards, attended numerous meetings as the representatives of the Roundtable, and formalized communications within the group by maintaining a variety of mailing lists and compiling a comprehensive directory of state and local pollution prevention programs. WRITAR also drafted and coordinated the approval and distribution of a paper on program effectiveness, a product of one of the conference work groups. All these efforts were undertaken with an eye toward providing the Roundtable with a structure and membership base that would allow it to operate successfully as a nonprofit corporation.

WRITAR Activities Since the Fall 1991 Conference

After holding extensive discussions with the Roundtable Advisory Board, it was decided to proceed with efforts to incorporate the Roundtable as a distinct, nonprofit entity. The uncoupling of the Roundtable and WRITAR is seen as necessary by both the Roundtable Advisory Board and WRITAR for two primary reasons. First, this uncoupling will be seen as fulfilling the original intent of the Office of Pollution Prevention grant. WRITAR;s guidance of the Roundtable was intended to ultimately result in the establishment of the Roundtable as a stand-alone organization. The Advisory Board and WRITAR both agree that the Roundtable has achieved a sufficient level of maturity as an organization and is ready to strike out on its own.

The second primary reason for the uncoupling of the Roundtable and WRITAR revolves around an effort to clarify the identities of both organizations. For the Roundtable to effectively communicate the sense of its membership to government and industry on issues of importance, it will be vital for the Roundtable to be speaking from a distinct identity.

Considering the substantial amount of confusion WRITAR has encountered regarding its identity in relation to the Roundtable, the clarification of roles and perspectives that would come about as a result of the uncoupling will greatly benefit both organizations as they continue to pursue their missions into the future.

Interim Advisory Board Meeting

At the fall 1991 conference in Cleveland, the Advisory Board directed WRITAR to arrange for an interim board meeting in order to provide the board with an opportunity to refine the focus of the group and develop a strategy for the incorporation of the Roundtable as a 501 (c) (3) nonprofit corporation. Arrangements were made and the meeting was held February 28 and 29 in Northfield, MN.

With all the Advisory Board members in attendance, the group tackled a hefty agenda, addressing such diverse issues as reviewing the mission statement and selecting a state in which to file for incorporation. The Advisory Board emerged from this process with an action plan and a list of activities for WRITAR to undertake on behalf of the Board.

Membership Dues

The Advisory Board ratified a memberships structure for the Roundtable and directed WRITAR to develop and distribute a packet of information soliciting dues of $100 from each state program and individual member. These packets were mailed out the week of April 6. Applications for membership with dues payments attached began coming into the WRITAR offices the very next week.

Incorporation

After reviewing a range of options, the Advisory Board instructed WRITAR to draft Articles of Incorporation, Corporate By-laws, and documents necessary for securing nonprofit status under IRS 501 (C) (#) provisions. The Roundtable will be incorporated in the State of Minnesota as an interim measure. The incorporation process is not very complicated and it is expected that once a new executive director is chosen, that individual will investigate incorporation in that person's home state.

At this point, the Articles of Incorporation, By-laws and appropriate IRS documents have been submitted to the Advisory Board for review and comment. After addressing all the comments and questions from the Advisory Board, WRITAR will file on behalf of the Roundtable for incorporation in the State of Minnesota and, once incorporated, will submit the proper forms to the IRS seeking nonprofit status. WRITAR anticipates being able to file the Articles of Incorporation with the State on or about May 4 and submitting the 501 (c) (3) packet sometime shortly thereafter. The IRS review process is expected to take about three months.

Program Directory

The Roundtable Program Directory is in final form and is currently being printed. Each program listed in the directory will be sent one copy. Additional copies may be

available for the printing costs. WRITAR and the Office of Pollution Prevention are currently investigating options to provide for the wider distribution of the directory.

Other WRITAR Activities

WRITAR has been very proactive in promoting the Roundtable as a source of consistent, reliable information regarding state and local pollution prevention. The Roundtable has been cited in *Nation's Business*, *Safety and Health*, *EI Digest*, and *Environment Today* magazines. These citations led to more than 100 phone calls from businesses and other organizations looking for information on and referrals to state and local pollution prevention programs. WRITAR staff have also published articles on state program activities in the *Pollution Prevention Review* as a way of publicizing the efforts of these programs.

Roundtable Update

David Hartley
California Environmental Protection Agency
Department of Toxic Substances Control

Welcome to the National Roundtable of State Pollution Prevention Programs spring conference. As you can see by your agenda, we have a very exciting and fun-filled two and one-half days ahead of us. We have a very diverse group of speakers representing the various media programs, which points to the focus of this conference—Multimedia Approaches to Pollution Prevention!

It seems that we have been very successful in spreading the word about Pollution Prevention. Most people have heard the term and may even have a working understanding of what it means. But, I don't think we have been very successful at implementing comprehensive multimedia Pollution Prevention Programs. It's like we have people on board the train, and the train has left the station but the cars are on parallel tracks trying to out race each other to win at this thing we call Pollution Prevention.

We have the air programs implementing Pollution Prevention. We have the water programs implementing Pollution Prevention. We have the hazardous waste programs implementing Pollution Prevention. We have the solid waste folks implementing Pollution Prevention. But all these program are in different rail cars speeding down parallel tracks!

Don't get me wrong. I think we have come a very long way in a very short period of time. But, nowhere do I see a master plan that will guide the merger of these Pollution Prevention programs into a comprehensive, coherent, "Mean, Lean Working Machine!" At some point we have to work on the merger of these programs in order to really accomplish true Pollution Prevention.

So, as you attend these next two and a half days, listen, take notes, ask questions and keep in mind that the next great hurdle which must be overcome is how to merge the various media-specific Pollution Prevention programs. Hopefully, the diversity of presentations you will hear will begin to give you some ideas on how Pollution Prevention can and will ultimately merge into a mean, lean working machine.

Enough preaching! Now on to some serious stuff. I just want to say that it seems appropriate to have the Roundtable in North Carolina on Earth Day, since the roundtable was originally founded by the N.C. Pollution Prevention Pays Program back in 1985. More importantly, I want to acknowledge the person who has worked so diligently to make this spring Roundtable possible: Stephanie Richardson.

I also want to acknowledge the precedent that she has set by having a state program host the Roundtable. As you may or may not know, Stephanie worked hard to get

contributions from industries and to further subsidize this conference with state funds. Already, I am aware of two separate proposals to host the October Roundtable conference. It would seem to me that the criteria for selecting the next host will focus on leveraging dollars: The one who offers the most money wins!!

Roundtable Update

The Roundtable Board met in February of this year to discuss the transition of the Roundtable from an arm of WRITAR to become its own separate entity. It was unanimously decided that the Roundtable would file the necessary paperwork to become a nonprofit organization. The Articles of Incorporation will initially be filed this year in Minneapolis in order to allow us to be eligible for grant funding in federal FY 1992-93.

It was further agreed that the Roundtable would begin a national search for an executive director, an assistant director, and a staff person. The job descriptions haven't been fully developed yet but will be available in the near future from WRITAR. Interested applicants should contact Bob Style at (612) 379-5995.

Elections of Board Members

Board members are elected for 3-year terms. This year, Board members nomination will occur in Regions 2, 7, 8, 9, 10. In order to stagger the election of new Board members, the region 7 representative will serve a 2-year term, and the region 8 representative will serve a 1-year term. Nominations should be sent to the regional Board representative or the outgoing Board member from your region. Nominations for regions 7 and 8 should be sent to Priscilla Seymour in Texas.

We are asking potential nominees to submit a resume of work history and a one- to two-page statement of individual qualifications for serving on the Board as well as a vision statement for the future direction of the Roundtable.

This statement constitutes the formal announcement of office vacancies. The statement will also be in the PPIC-Roundtable Bulletin. Elections will be held in September. There will be a poll of voting members, and results will be announced at the October conference.

Conference Dates

Conference dates have been established as follows:

- SPRING CONFERENCE. The week following Earth Day has been chosen for the Spring Conference.

- FALL CONFERENCE. The third full week in October has been chosen for the Fall Conference.

Membership

By now you should have received information on Roundtable membership dues. Please send in your membership dues for the transition period. They will be handled by WRITAR. Any questions can be handled by Bob Style or your Board representative.

The last item that the Board discussed in having the Roundtable mount a massive effort to bring in other media program members: Air, Water, Solid Wastes. We need them to be part of our organization if we intend to ultimately couple the individual Pollution Prevention trains!!

Pollution Prevention Activities in the Administrator's Office

Kate Perry
Pollution Prevention Policy Staff

I am a member of the staff to the Senior Policy Council, which is made up of the assistant administrators as well as the regional administrators, in the Administrator's Office. Our staff was created by the Appropriations Committee to oversee pollution prevention work throughout the agency. We are a staff of five people, and all our work is under the umbrella of integrating pollution prevention into EPA's activities. The point is to make source reduction a way of doing business at EPA. Right now our efforts are in four major activities.

First, is SRRP, Source Reduction Review Project, which was organized in response to requirements of the Pollution Prevention Act that EPA review all new regulations for their effect on source reduction. The long term goal is to institutionalize source reduction. We are currently targeting a list of regulations that were already on the EPA agenda for development that cover 17 industrial categories.

Another project we are working on now is in the enforcement area. We are evaluating how EPA has encouraged source reduction in enforcement activities. The Office of Pollution Prevention and Toxic Substances (OPPTS) has done a report on this, and all of the other enforcement arms of the other program offices are going to do the same thing. They are going to look at specifics of what they actually got violators to agree on. There seem to be two main ways of incorporating pollution prevention into enforcement. One is to make it part of the correction by the violator. The other is to get the violator to do what we call supplemental environmental projects, which would be adding on prevention programs.

A third project we are dealing with is Media State Grants. By this I mean EPA's grants for activities other than pollution prevention. We see these as potential vehicles for promoting pollution prevention. The budget for these now is approximately $500 million, so we would like to see that money leverage pollution prevention. We have just begun to investigate whether these state grants could actually incorporate pollution prevention. The issue is whether prevention can be incorporated comfortably and productively into media grant programs. We are well aware of the reality that you all face. We know there's intense competition for funds among programs, that there are a lot of demands, and that EPA headquarters has recently been active in sending out memos with more and more themes of the month. We really want to know what state pollution prevention programs think about the possibility of using state media grants for pollution prevention activities, and we have a session scheduled for Friday morning to get your ideas on how this might be accomplished.

The last activity we are working on is within EPA. We are examining EPA's budget to see what part of the budget is already being or could be used for pollution prevention. The point of this is to identify the scope of what is being done and to look opportunities for

expanding our efforts. Obviously, there is an inherent contradiction between breaking out activities that are labeled pollution prevention and at the same time talking about the desire to integrate pollution into activities generally.

Pollution Prevention in Implementation of the Clean Air Act

Tim Mohin
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
Durham, NC

After being involved in working with Congress on writing the Clean Air Act amendments, I am now involved in implementing Title III, the air toxics provisions, of the 1990 Clean Air Act. Another interest of mine is pollution prevention, and I have been trying to incorporate pollution prevention philosophies and strategies in the implementation of the Clean Air Act.

Although pollution prevention was not a driving force in the passage of the Clean Air Act amendments, there is some precedent for use of pollution prevention philosophies and values in the implementation of these amendments. And, I don't think we can ignore the opportunities that are afforded to us by the implementation of these amendments. EPA has estimated that $20 billion a year will be spent on compliance by the time this act is fully implemented. Industry's estimate is about ten times that at $200 billion per year. So obviously this act will have a huge impact, and right now we can make a difference in how the rules will be written and whether they embody a pollution prevention philosophy.

One of the reasons I say that there is precedent in the Clean Air Act for pollution prevention is that it is written there. In Title I, Section 101(c) you will find the following:

> A primary goal of this Act is to encourage and otherwise promote reasonable Federal, State, and local government actions, consistent with the provisions of this Act, for pollution prevention.

There are ten titles in the Clean Air Act and many of them do incorporate philosophies that can be called pollution prevention. Under the nonattainment provisions, the alternative fuels and clean vehicles strategies are prevention oriented. Under Title IV, the acid rain title, the emission allowance trading system is prevention oriented. Title VI, stratospheric ozone, is another notable example of prevention, where an outright ban of CFCs will be phased in faster than the Montreal Protocol would have.

Since air toxics is my field, I am going to focus on pollution prevention in Title III, the air toxics title. There are three specific provision under air toxics I want to mention.

Maximum Achievable Control Technology (MACT)

The first provision I want to discuss is Maximum Achievable Control Technology (MACT): MACT rules have to be applied to every major source of air toxics in the country. It is interesting to note that the words "Maximum Achievable Control Technology" don't actually appear in the Clean Air Act under the emissions standards. The word "technology" on the end has everyone believing these are technology-based command-and-control regulations. Nowhere in the act does it say that. In fact, a lot of what is said is just the opposite of that. Under the provisions for developing MACT standards, EPA is to "reduce the volume of or eliminate emissions through processes changes and substitutions." This is the first thing. If you take this as a hierarchy, you see that MACT is not necessarily a technology at the end of the pipe. The next thing is enclose systems or eliminate emissions . When you get past those two strategies, you are down to capture and treat. So clearly, the framers of the Clean Air Act did not just have technology at the end of the pipe in mind when they developed the MACT process.

In developing MACT strategies, Congress wanted to develop a concept of a floor, that is a minimum level of emission reductions. There was a lot of disagreement about where this floor should be established, but in the end, the law set the MACT floor at the level of emissions achieved by 12 percent of the best controlled similar sources. Why is this important for pollution prevention? It is a forcing function. When emission reductions have to be based on what similar sources are doing, suddenly the ones who are doing the best job are almost free of regulation. They are setting the standard for the others, and that tends to force major source industries to look at their emissions and ask how they can become a minor source so they are not subject to regulation or can set the pace for development of MACT.

I want to talk about how MACT standards are formally developed. There is specific language in the Clean Air Act amendments which direct EPA not to write technology standards, that is standards that specify specific control technologies. Instead, the act encourages development of performance standards, limits that sources must attain, such as pounds per ton of product or pounds per hour of operation. These are flexible emission rates. That is, if an industry can meet that performance standard through any means - substitution, process change - it is in compliance with the regulation. This can provide an incentive for industries to do prevention oriented strategies.

It must be pointed out that in developing MACT performance standards, one of the first things EPA has looked at in the past is what performance levels are achievable with existing control technologies. These levels have often been used for developing performance standards, but there is nothing in the act to say that you have to put that control technology on the pipe.

Source Reduction Review Project: EPA's Source Reduction Review Project has targeted 17 regulations, most of which are MACT standards, for extra emphasis on pollution prevention. Training for regulation writers will be emphasized because we're talking about a

philosophical change. This change will require EPA's technical staff and regulation writers to start looking at things in new ways. The Clean Air Act sets out a schedule by which emitters of toxics are to be regulated and under that schedule, standards for the first group are to be promulgated within two years. Some of the proposed regulations for this group are with the Office of Management and Budget now. The next group is due to be regulated in four years; the next, in seven; and finally, all major sources of toxics are to be regulated in ten years. So, the regulations targeted by the Source Reduction Review Project will be mainly those in the four, seven and ten year groups because there is enough lead time to affect the development of these standards. That doesn't mean we're ignoring the earlier standards. We are looking at ways to get enabling documents out to the states so they can provide guidance to industries affected by these standards so they can achieve the standards through prevention oriented strategies.

The furniture industry is one of our top priorities. Manufacture of wood furniture is a big industry in this state and they use a lot of coating operations. Solvent substitution in coatings is a big issue in that industry.

Some approaches to get these strategies incorporated into our regulation writing include enhanced surveys. In an effort to figure out what the MACT floor is, we go to industry and ask what emissions are. If we get back information that shows a company in an industry is not emitting a chemical everyone else is emitting, then we will ask what kind of process change or substitution has been used. This kind of enhanced data collection could form the basis for a prevention oriented MACT standard. Again, we have the authority under MACT to completely eliminate the emissions of toxic chemicals.

Another strategy under the Source Reduction Review is cooperative agreements with industry to try to develop more prevention approaches and further use of existing data, such as the Toxics Release Inventory.

This is a multioffice approach, and we are working closely with the Office of Research and Development and the Office of Pollution Prevention and Toxic Substances.

The regulations targeted for pollution prevention strategy development under the Source Reduction Review Program are outlined in the accompanying table.

Early Reductions Program

The second provision of the air toxics title I want to discuss is the Early Reductions Program. Under the Early Reductions provisions of the Clean Air Act, there is an incentive for industries that are going to be covered by the MACT regulations to reduce their emissions early on and therefore get some benefit later. Originally this provided that if a facility could get a 90 or 95 percent reduction of hazardous air pollutants (HAP) from a baseline of no earlier than 1987, then it could get out of MACT altogether. That changed somewhat as the act was developed to become a six-year extension from the otherwise applicable compliance date with MACT. We are now working on promulgating the rule for

this early reduction provision. There is a lot of interest in industry so this has turned out to be a big incentive for industries to enter what we call "enforceable commitments" to achieve these reductions prior to the establishment of standards.

There are some questions about the early reduction program. One question is "what is a source?" That is, what is the entity within the fence line where that 90 to 95 percent reduction applies? There is also a question of how this program will be delegated to the states when states do not want to define "source" identical to the EPA regulation. In our proposed rule there is a flexible definition of "source" that allows facilities to put various parts of their operation in a "bubble" and reduce the bubble by 90 or 95 percent. The parts in the bubble would then qualify for the emissions reduction compliance extension. Part of this program is a weighted trading system so that facilities have to reduce high risk pollutants as well as the not so severely toxic chemicals to meet the requirements of this program.

Modifications Program

The third provision of the air toxics title I want to discuss, and one that is extremely complex, is the Modifications Program. This provision works like a PSD or prevention of significant deterioration program. Essentially it provides that if any source is modified so that emissions exceed a de minimis level, the facility comes under a standard whether or not there is an existing MACT. An interesting provision of this is that if the facility can find an equal or greater decrease of a more hazardous pollutant, it can "net out" the increase so that it is not subject to another standard. This is an obvious incentive to pollution prevention. If a facility anticipates a modification in a plant, there will be an incentive to look for ways to reduce emissions.

The outcome of this provision is case-by-case MACT. If a facility is found to increase emissions of a substance, the state will write a specific MACT, an emissions reductions rule for that facility. Here again, there is opportunity for pollution prevention in the development of these standards.

In closing, I'd like to encourage all the Roundtable participants to work with EPA to identify pollution prevention opportunities in the rulemaking. I currently lead a group that is developing a strategy for implementation of the air toxic title, and it is pretty clear that if we try to attack our job the way we always have with command-and-control, which requires that we know everything before we do anything, we're going to fail. We have to change our philosophy, change the way we do our job. The best way to do that, I think, is to reach out to the pollution prevention people in the states.

Industrial Solid Waste

Jim Lounsbury
U.S. Environmental Protection Agency
Office of Solid Waste

Should There Be a Federal Industrial Solid Waste Program?

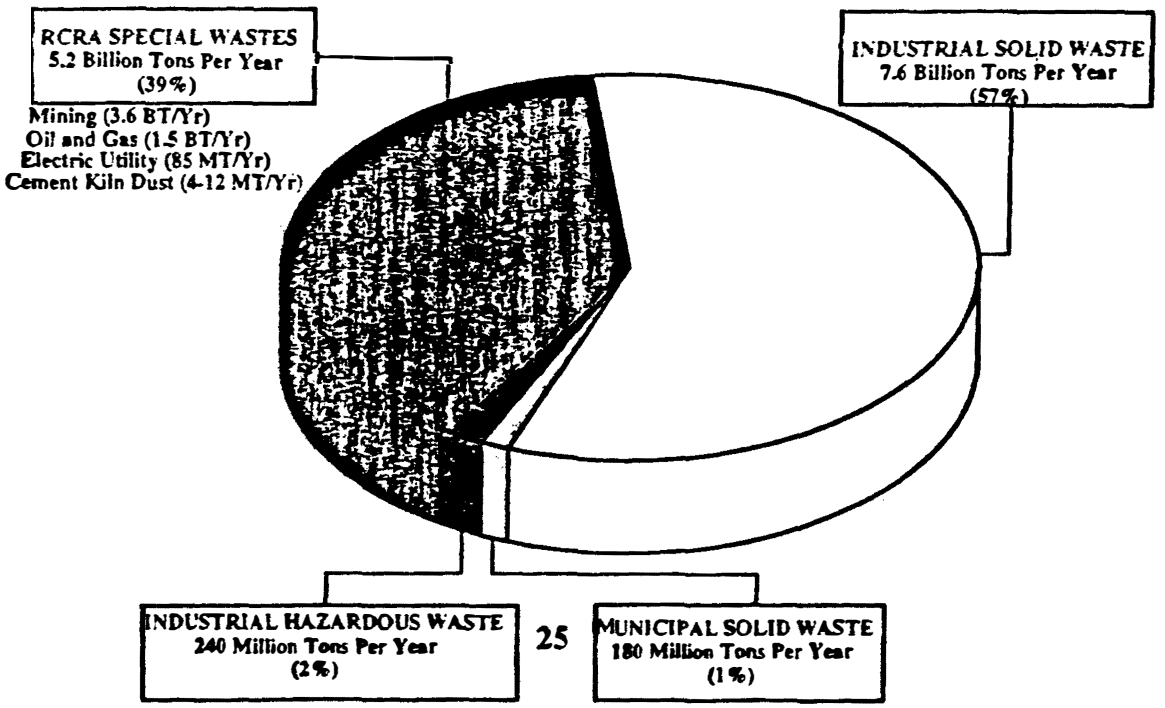
Congress is actively considering various approaches to establish a Federal program to characterize and manage industrial solid wastes. The first, and most critical, step in determining what sort of Federal program, if any, is needed for managing industrial solid waste is to identify what wastes cause risks to the environment, and what tools and approaches State program offer for managing these risks.

The industrial solid waste universe is extremely large. (See accompanying figures.) EPA estimates that about 7.6 billion tons per year are generated and managed onsite in land-based disposal units by about 12,000 facilities. EPA and the States do not have information describing what is in these wastes or what impacts they are causing at the national level.

EPA is developing a strategy for characterizing this huge waste universe. It is clear that the States will need to play a major role in characterizing the problem and, if risks are identified which need addressing, exploring traditional and nontraditional approaches to solve the problem.

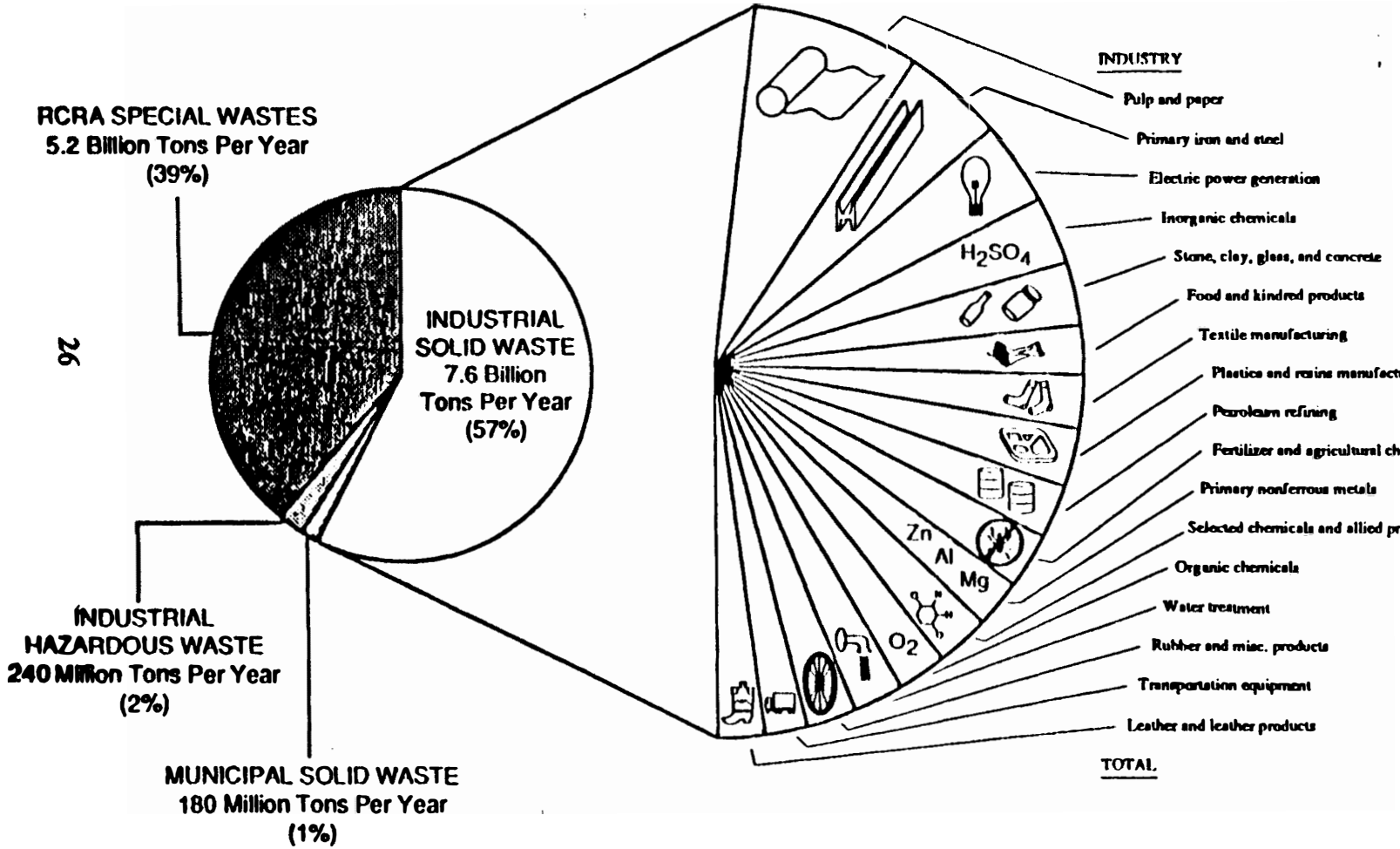
SOLID WASTE UNIVERSE

13.2 Billion Tons Per Year



INDUSTRIAL SOLID WASTE UNIVERSE

The Range of Industries Generating Industrial Solid Waste Is Diverse



INDUSTRY	VOLUME OF WASTE (Waste in 1,000 tons)
Pulp and paper	2,251,7000
Primary iron and steel	1,300,541
Electric power generation	1,092,277
Inorganic chemicals	919,725
Stone, clay, glass, and concrete	621,974
Food and kindred products	373,517
Textile manufacturing	253,780
Plastics and resins manufacturing	180,510
Petroleum refining	168,632
Fertilizer and agricultural chemicals	165,623
Primary nonferrous metals	67,070
Selected chemicals and allied products	62,987
Organic chemicals	58,864
Water treatment	58,846
Rubber and misc. products	24,198
Transportation equipment	12,669
Leather and leather products	3,234
TOTAL	7,616,149

International Activities:
Environmental Pollution Prevention Project (EP3)

James Gallup
Agency for International Development
Bureau for Science and Technology

Summary

The goal of EP3 is reduction in environmental pollution associated with urbanization and industrialization.

Traditionally, efforts at urban and industrial pollution management, where they have existed at all, have concentrated on "end-of-pipe" pollution treatment. Pollution treatment is ultimately unsustainable as the principal means of urban and industrial pollution management. This is especially so in developing countries, where effective pollution treatment would divert ever larger amounts of scarce resources from pressing economic development uses. Experience in the United States and other developed countries in recent years has confirmed that pollution prevention through waste minimization and cleaner production technologies is an alternative that is less expensive, more cost-effective, and sustainable over the long run. Applied as a means of pollution management in developing countries, pollution prevention promises to improve plant efficiency, rapidly enhance the quality and quantity of natural resources for production, and make it possible for more financial resources to be directed to economic development investments.

The purpose of EP3 is to create the necessary conditions for decision makers in the public and private sectors to undertake proper urban and industrial pollution management in A.I.D. -assisted countries. The necessary conditions are (1) knowledge of the means for pollution prevention and control, (b) familiarity with the advantages of cleaner production methods, and (c) assistance for introducing industrial process and equipment innovations that minimize waste generation.

EP3 will promote pollution prevention and cleaner production primarily by:

(a) providing a broad range of technical assistance, training, and information services for environmental awareness and pollution prevention at the plant, industry category, and national levels;

(b) strengthening and expanding in-country sources of technical expertise for pollution prevention, including establishing national centers of pollution prevention training, information, and technical assistance;

(c) identifying, promoting, and expanding sources of financing for pollution prevention technology and creating linkages between firms and agencies in

Multi-Program/Multi-Media Relationships

Industrial/Process Category	Date of Proposed Regulation			1989 Toxic Release Inventory (TRI) Multi-Media Releases and Transfers [4]		
	AIR [1]	WATER [2]	HAZARDOUS WASTE [3]	Air (%)	Water (%)	Other (%)
Pulp and Paper Production	1993	1993	1994(A) [5]	51	42	7
Pesticide Formulating		1994	1993(C) 1994(D)	22	4	74
Pharmaceuticals Production	1996	1994		35	32	33
Printing/Publishing (Coating)	1993		1994(B)	89	2	9
Degreasing Operations	1993		1994(B,D)	NA	NA	NA
Machinery Manufacturing and Rebuilding		1994	1994(B,D)	NA	NA	NA
Styrene Butadiene Rubber and Latex Production	1993		1994(B)	14	0	86
Polystyrene Production	1993		1994(B)	NA	NA	NA
Wood Furniture	1993		1994(B)	96	<1	4
Paints, Coatings, and Adhesives Manufacturing	1996		1996(E)	35	32	33
Paint Stripper Users	1996		1996(E)	NA	NA	NA
Rubber Chemicals Production	1996		1994(B)	20	26	54
Paper and Other Webs (Coating)	1996		1994(B)	87	1	12
Acrylic/Modacrylic Fibers Production	1996		1994(B)	36	11	53
Reinforced Plastic Composite Production	1996		1994(B)	NA	NA	NA
Integrated Iron and Steel Manufacturing	1996			15	8	77
Plywood/Particleboard Mfg.	1999			88	11	1

1. Air rules refer to MACT standards under the Clean Air Act. Dates proposed in the Federal Register - February 1992.
2. Water rules refer effluent limitations guidelines.
3. Hazardous Waste refers to RCRA listings of specific wastes. A) Dioxin; B) Solvents III/II; C) Carbamates; D) Chlorinated Aliphatics; E) Paint Waste. The solvent listing determination may indirectly affect many uses of the solvents.
4. Toxic Release Inventory (TRI) air releases include point and fugitive emissions. Water releases include direct and indirect (via POTW) discharges to water. Releases to other media include releases to land, underground injection, and shipments off-site.
5. May or may not occur, depending on outcome of Office of Water regulations.

EP3-assisted countries and U.S. suppliers of pollution prevention expertise and equipment;

(d) helping to improve national environmental policies, laws, regulations, and their implementing institutions so as to expand incentives for cleaner production; and

(e) promoting and serving as a catalyst for Cleaner Production Worldwide, an initiative to encourage, coordinate, and combine the pollution prevention efforts of A.I.D. and other U.S. and donor agencies with the aim of achieving maximum pollution prevention benefit from their respective resources and comparative advantages.

EP3 is not seen as the ultimate vehicle for achieving substantial progress in national urban and industrial pollution prevention in any country. Rather, through its Country Support Program described below, it is seen as a potent instrument for setting in motion long-term concerted efforts within a country, and as an instrument for promoting, supporting, integrating, and laying the groundwork for a variety of Mission activities; and through that, for maximizing the environmental and pollution prevention benefits of limited Mission resources.

During its 10-year Life of Project, EP3 will operate on three closely linked tracks: (a) EP3 operations at the A.I.D./Washington level; (b) EP3 County Support Programs in selected A.I.D.-assisted countries; and (c) short-term training and technical assistance available for all A.I.D.-assisted countries.

EP3 Operations at the A.I.D./Washington Level

The EP3 project design includes three major operating elements at the A.I.D./W level:

(a) an early project learning system designed to enhance learning from the pioneering experience of EP3 "emphasis countries" in the first three years, and to utilize what has been learned to run simultaneous program more cost-effectively in many more countries during the following seven years;

(b) an EP3 Cleaner production Resource Bank that will prepare training materials and conduct pollution prevention related training, will maintain databases on a wide range of topics related to pollution prevention, and will disseminate information through a variety of media aimed at both broad and highly targeted audiences; and

(c) Cleaner Production Worldwide, an initiative to encourage, coordinate, and combine the pollution prevention efforts of U.S. agencies and multilateral and bilateral development assistance organizations worldwide, resulting in more

efficient leveraging of the resources of other entities to finance EP3 pollution prevention innovations.

EP3 Country Support Programs

EP3 Country Support Programs encompass over 25 discrete types of activities designed systematically to improve knowledge of the means for pollution prevention and control and of the advantages of cleaner production methods; to introduce industrial pollution prevention innovations; and to create the conditions -- including the policy, regulatory and institutional framework -- necessary for expanding and accelerating industrial process and equipment changes that minimize waste generation.

The following describes a model Country Support Program that incorporates all the possible types of EP3 activities. Each EP3 Country Support Program will be tailored to the priorities and circumstances of the country, however, and may include fewer discrete activities sequenced and timed in a somewhat different way and therefore of a lesser or greater duration than the three years suggested by the Country Support Program model. EP3 County Support Programs will be USAID initiatives that are likely to result in a demand for additional and expanded pollution prevention and control initiatives arising from heightened awareness and demonstrated benefits of pollution prevention and improved environmental quality. Accordingly, they will be designed in collaboration with USAIDs, and the designs will require Mission approval.

The many specific activities that may be encompassed by an EP3 Country Support Program are organized under five broad components introduced in two phases. The pace of progress and character of response to activities in Phase I will determine the specific activities possible in Phase II in each country. Before Phase II is formally launched, an agreement will be concluded among the host country, USAID, and EP3 management regarding timing, intensity, and precise characters of Phase II activities, and the division of functional and funding responsibilities for carrying them out.

In Phase I of EP3 Country Support Programs, first, under the heading of "national EP3 strategy development," several activities are undertaken that lead to the detailed plan for the EP3 Country Support Program tailored to local needs and circumstances. Development of the strategy is followed immediately by activities aimed at introducing no/low capital cost pollution prevention innovations at designated initial target plants; these activities, under the heading of Phase I "plant level innovations," represent the first steps in implementing the national EP3 strategy. Phase I is expected to take between three and six months.

Phase II encompasses three components that may be initiated sequentially or simultaneously, but for the most part are carried out simultaneously and interactively. Phase II "plant level innovations" include activities connected with introducing more capital-intensive pollution prevention and control measures at plants that have successfully carried out no/low capital cost innovations. "Industry category/hot-spot level activities" are designed to spread the proven innovations throughout the initial target industry category. In some

cases, instead of a target industry category, there will be a target "hot-spot." This term refers to a zone where a large number of heavily polluting plants are concentrated; the plants may or may not be in the same industry category. "National program development and policy reform" activities provide assistance for extending the EP3 effort to other industries and hot-spots; for building in-country capacity to deal with the full gamut of pollution concerns; and for program, policy, and regulatory reform in support of pollution prevention. Phase II continues for two and a half years, during which EP3 assistance is systematically phased out as in-country capacity is strengthened.

Specific EP3-assisted activities potentially encompassed by individual Country Support Programs are summarized in the following paragraphs:

Phase I National EP3 Strategy Development: Rapid assessment of the national pollution prevention and control policy and regulatory environment; identification of in-country pollution prevention and control experts; identification of sources of financing for pollution prevention equipment; selection of the initial target industry category or hot-spot and initial target plants; preparation of a national EP3 strategy that is finalized and endorsed at a Pollution Prevention Roundtable.

Phase I Plant Level Innovations: (in each of the initial target plants). Training of plant personnel to participate in pollution audits and assessments; conduct of pollution audits and assessments; formulation and execution of programs of no/low capital cost pollution prevention innovations; evaluation of pollution prevention performance; development, for individual target plants, of Phase II action plans for introducing more capital-intensive pollution prevention innovations.

Between Phases I and II, a Leadership Conference on Pollution Prevention is conducted as a means of consolidating and publicizing high level commitment to industrial pollution prevention, and to Phase II of the EP3 Country Support Program specifically. The Leadership Conference represents a decision and commitment benchmark, and follows the conclusion of agreements among the host country government, USAID, and EP3 management regarding timing, intensity, and precise characters of Phase II activities, and the division of functional and funding responsibilities for carrying them out. Other donor agencies may also be parties to the detailed workplan and implementation commitments of Phase II. A number of measures can be taken to minimize or eliminate the effects of potential delays resulting from negotiating these commitments and bringing the associated resources on line, so as to avoid a loss of momentum in the overall EP3 Country Support Program.

Phase II Plant Level Innovations: (in each of the initial target plants that have successfully introduced no/low capital cost pollution prevention measures). Technical and economic appraisals for capital-intensive pollution prevention and control technology; assessment of information from suppliers of pollution prevention equipment and development of loan

applications for financing the equipment; installation of pollution prevention equipment. In addition, EP3 will provide limited financial support for pollution prevention equipment in initial target plants in cases where:

* the equipment would have widespread application in the industry category;
* the recipient plant agrees to serve as a demonstration site for others; and
* a small amount of leverage financing will substantially expedite acquisition of full financing from other sources, and thus facilitate rapid installation of the equipment.

Phase II Industry Category/Hot-spot Level Activities: Training for plant managers and personnel, including industry or hot-spot-wide training related to pollution prevention and waste minimization, on-site training in individual plants, and demonstration-based training utilizing innovations introduced in initial target plants; identification and resolution of pollution prevention and control problems that can only be dealt with or can readily be dealt with, on an industry or hot-spot-wide basis; establishment of linkages with in-country and U.S. suppliers of pollution prevention expertise and technology.

Phase II National Program Development and Policy Reform: Development of a national center of pollution prevention training, information, and technical assistance that is linked into pollution prevention databases worldwide; studies in support of policy, regulatory, and enforcement/incentive reforms; strengthening the capacity of institutions with pollution prevention responsibilities; mounting of pollution prevention awareness programs; carrying out special programs for specific target groups; and designing, conducting, and evaluating related USAID initiatives.

As Phases I and II progress in a number of countries, effective demand for pollution prevention expertise and equipment will be generated, while links are established with U.S. suppliers of this expertise and equipment.

Since EP3 Country Support Programs are essentially Mission initiatives, selection of countries for them will necessarily be made in close consultation with USAID Missions. The selection process will be based on analysis of explicit preference factors related to the type and severity of urban and industrial pollution problems in the country, the likelihood of success and significant beneficial impact of an EP3 Country Support Program, and the level of demonstrated institutional interest in and commitment to pollution prevention efforts.

EP3 Short-term Training and Technical Assistance

In addition to operations in Washington, DC, and highly coordinated multifaceted Country Support Programs in designated countries, EP3 will maintain a short-term training and technical assistance service operated largely but not exclusively on a buy-in basis. The phrase "short-term" is meant to distinguish this technical assistance from that provided in connection with EP3 Country Support Programs, and not to suggest that it is available only for efforts of very short duration. EP3 short-term training and technical assistance services

will be available directly to USAID Missions, or through them to host-country national and local governments, universities, trade organizations, and other NGOs. These services will be available to all A.I.D.-assisted countries.

EP3 short-term training and technical assistance services will be available covering the entire range of activities and subjects as discussed under EP3 Country Support Programs. In addition, training and technical assistance will be available through EP3 to respond to any need associated with the larger context of urban environmental issues, pollution control and treatment, and general environmental quality management. The EP3 implementation mechanism and the EP3 Cleaner Production Resource Bank assure access to a broad range of training materials and a wide array of U.S. urban and industrial pollution prevention and control expertise on a quick response basis.

Thus, in addition to the activities and subjects mentioned above, training and technical assistance will be available through EP3 to respond to any need associated with the larger context of urban environmental issues, pollution control and treatment, and general environmental quality management. EP3 technical assistance will also be available to help Missions with design, conduct, and evaluation of environmental initiatives; with environmental resource management aspects of their CDSSs, Action Plans, and other planning documents; with project environmental impact assessments; with methodologies for determining values for PRISM indicators that are directly and indirectly related to environmental resource management; and for related types of activities.

Implementation

The EP3 Project will be carried out by the Office of Environment and Natural Resources, Bureau for Research and Development (R&D/ENR) with shared technical management and oversight from the Office of Energy and Infrastructure (R&D/EI).

The primary implementation mechanism for EP3 will be a core contract and complementary requirements contract for buy-ins. It is anticipated that the primary contractor will have subcontracts, grants, or other agreements with a small number of environmental NGO professional associations and memoranda of understanding or other agreements with a sufficient number of other organizations to ensure expeditious access to a wide array of pollution prevention, environmental, and industrial process experts on both a paid and voluntary pro bono basis. Some of these additional organizations may include industry trade associations and member companies, education foundations and universities, independent consultants and consulting companies, equipment manufacturers and EPA, Peace Corps, state government, and local government environmental professionals.

Technical assistance teams fielded for EP3 Country Support Programs will be assembled from a variety of source, depending on the specific needs of a particular country and the available sources of needed expertise. EP3 expects to utilize the primary implementation mechanism to strengthen the international pollution prevention support activities of a few U.S. environmental NGO professional associations to deliver their

professional members to help implement EP3 country support programs on a pro bono basis. EP3 will supplement these experts through agreements with other participating organizations and individuals. Expertise will often be provided on a volunteer pro bono basis, but provision is also made in EP3 for paid services. A special effort will be made to identify experts from counterpart type and size U.S. plants to provide technical advice to industries in EP3 country support programs. In-country experts will participate in the technical assistance teams as a means of expanding their knowledge and experience.

Anticipated Project Accomplishments

Accomplishments over the 10-year life of EP3 are expected to include:

* At least 15 EP3 Country Support Programs, including, in each country, an assessment of the national pollution prevention policy and regulatory environment; over one hundred trained pollution prevention experts in individual plants, trade associations and other NGOs, private firms, research institutions, and national and local government agencies; directly completed programs of no/low capital cost pollution prevention innovations in 6-8 factories, and also indirectly in other factories as a result of efforts to spread proven innovations; capital-intensive pollution prevention innovations introduced directly in at least 5 factories, and also in other factories as a result of efforts to spread proven innovations; established lines of financing for pollution prevention innovations; trade linkages with U.S./ suppliers of pollution prevention expertise and technology; pollution prevention awareness and targeted special programs; an ongoing national pollution prevention program based on public/private cooperation; policy and regulatory reforms undertaken or under consideration to promote pollution prevention; and a national center of pollution prevention training, information, and technical assistance.

* At least 80 short-term training and technical assistance missions addressing a broad array of urban environmental, pollution prevention and control, and general environmental quality management concerns.

* Establishment of an EP3 Cleaner Production Resource Bank, which will have disseminated an enormous amount of general and highly targeted pollution prevention information. All or part of the Resource Bank may be implemented though agreements with EPA that strengthen existing EPA pollution prevention clearinghouses and training centers. The training modules and databases developed by the Resource Bank as part of EP3 operations will continue to serve pollution prevention activities for many years.

* Establishment of Cleaner Production Worldwide, which will continue to operate and serve the pollution prevention activities of A.I.D. and other U.S. agencies and development assistance organizations worldwide.

Louisiana Department of Environmental Quality Pollution Prevention Survey

Jim Friloux
Louisiana Department of Environmental Quality
and
Kym Arcuri
Environmental Excellence Group

Pollution prevention requires a collaborative effort between industry and the regulatory community. The Louisiana Department of Environmental Quality recognizes the need to develop policies that promote the development of waste reduction activities that are both environmentally and economically sound. Regulations may, in some cases, dictate waste management practices which prevent or hinder effective source reduction activities. Economic and technical issues also serve as barriers preventing the beneficial use of resources currently designated as wastes.

The Louisiana Department of Environmental Quality developed a Pollution Prevention Survey in order to identify barriers preventing further pollution prevention. The survey identifies barriers in terms of regulatory, technical, and economic issues. Generators are asked to select specific wastes and identify the technical reasons responsible for generation and the barriers preventing further waste reduction. The survey provides a statistical database of information that can help guide future policy decisions. The survey has been distributed to about 118 generators who represent about 94 percent of Louisiana's reportable waste under the RCRA and TRI programs. Responses can be made either through hard copies or electronically in a specially formatted computer program. A telephone hotline has been established and a series of workshops have been given throughout the state in order to facilitate completion.

To date, over 70 percent have responded to the survey, either though workshop attendance of use of the hotline. The general focus by the generators is on identifying regulatory barriers which prevent reduction activities. These examples include specific examples on how the BIF regulations and RCRA "derived from" rules promote the generation of wastes. Other examples include inconsistencies in the wastewater regulations and how some mandated BDAT management options are counter productive or inefficient. A major issue raised by respondents involves communications with the regulatory community. Examples include the complexities and inefficiencies in dealing with divisions within both the state agencies and EPA simultaneously. The administration of regulations involving multi- and cross-media constituents has been brought up as a barrier to effective pollution prevention activities. Economic barriers raised thus far deal with the market risk involved in producing useful commercial products from existing wastes. Technical barriers primarily deal with the conversion and mass transfer limitations associated with manufacturing processes.

The 1992 survey will be completed by the end of July. Results will be published in August. Should you have any further interest in this activity, please contact Jim Friloux (504/765-0720) at the Office of Technical Program Support in the Louisiana Department of Environmental Quality.

Overview of Content and Format

Respondents are asked to select one specific waste constituent from each of the following categories:

1. Defined under RCRA
2. Wastewaters containing defined by either RCRA or TRI
3. Air toxic
4. Waste disposed though one of the following routes: incineration, deepwell injection, landfill of nonhazardous industrial solid waste

Detailed questions associated with each selection focus on:

a. Technical reasons for generation.

Conversion Processes:

* Undesirable by-products formed by side reactions which involve primary feed constituents
* Undesirable by-products formed by side reactions which involve fee or process impurities
* Specific reasons not yet identified
* Specific reason (s) is confidential information
* Other conversion process reason (please specify)

Mass Transfer Operations

* Unable to reduce existing level of "waste" constituent from matrix due to equilibrium mass transfer limitations
* Unable to reduce existing level of "waste" constituent from matrix due to limitations in separation technology
* Further reductions in waste constituents is economically unfeasible and unwarranted environmentally
* Specific reason(s) not yet identified
* Specific reason(s) is confidential information
* Other mass transfer process reason (please specify)

b. Barriers which prevent or hinder further reductions in generation rates:

Regulatory:

* Existing statutes

* Uncertainties in future or proposed regulatory activities
* Communication issues
* Potential disclosure of proprietary business information
* Issues of actions involving discrimination and inconsistency in the administration of regulations
* Perceptions involving "enhanced" liability or fear that communications with regulators can lead to regulatory repercussions
* Incremental costs and liabilities associated with additional permitting and compliance issues
* Other (specify)

Technical:

* Mass transfer limitations
* Conversion selectivity due to undesirable side reactions involving primary feed constituents
* Conversion selectivity due to undesirable side reactions involving feed or process impurities
* Undesirable secondary effects
* Other (specify)

Economic:

* Unacceptable economic incentives (ROI)
* Economic (market) risk
* Excessive cost/benefit relationship
* Other (specify)

Time Requirements

The average time necessary to complete sections of the LaDEQ Pollution Prevention/Source Reduction Survey are listed below:

General survey questions	2 to 4 hours
Detailed questions:	
RCRA listed wastes	4 to 8 hours
Wastewater streams	4 to 8 hours
Air emissions	4 to 8 hours
Incinerated wastes or deepwell injection	4 to 8 hours
TOTAL	18 to 36 hours

The variation in completion time is due to the availability of quantitative information published in TRI, RCRA, and facilities' in-house waste reduction reports.

State Program Update - Regulatory
Massachusetts Department of Environmental Protection (DEP)

Lee Dillard
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Massachusetts DEP

The Massachusetts Toxics Use Reduction Act was passed in 1989. The goal of the Act is to reduce toxic waste by 50 percent by 1997 through toxics use reduction (TUR). The Act sets up a fee on industrial toxics use to fund the effort.

The Act charged three agencies in Massachusetts with different responsibilities for TUR. It created the Toxics Use Reduction Institute and funded it at $1.3 million to do education, training and research. It renamed and funded at $1.3 million the Office of Technical Assistance to provide free technical assistance to industry. And, it provided $600,000 to the Department of Environmental Protection for regulation.

REGULATORY ASPECTS

The act sets new regulatory requirements for

- toxics use reporting,
- toxics use planning, and
- provides a mechanism for setting performance standards for specific industry segments.

It also encourages integrating source reduction of toxics into existing regulatory work by mandating

- multimedia inspections with a source-reduction emphasis,
- development of consolidated reporting so that companies aren't reporting for hazardous waste, water and air and SARA and TUR in different ways,
- development of models for taking source-reduction biased enforcement, and
- permitting that encourages source reduction and avoids shifting toxics between media.

Reporting. Last year, 1991, was the first year of toxics use reporting in Massachusetts. Reporting is based on the SARA 313 industry and chemical universe. We take the same companies that have to report for SARA 313 and add new requirements for them. We developed a new form, Form S, and we ask companies to think of their facilities in terms of productions units. We ask them to calculate by-products and emissions reduction indices, which are ratios of ratios of by-products and emissions that are based on a measure of production. This procedure will give us information about how by-products and emissions are changing, and most important, will give companies basic information for reducing toxics use.

Last year we had about 640 reporters and the data was not very good though we learned a lot about how to develop the program. We may not be able to use it to assess progress toward our goals. 1991 was basically a training year. We did a lot of training based on the reporting with the Office of Technical Assistance and the Institute, but there was still a lot of confusion about definitions and methods. Now we are better armed to go back out and do more training.

This year in July we will start phasing in SIC codes 14-76. In addition, over a three-year period, companies will be required to report their use of CERCLA chemicals. Each year we will add one-third of the CERCLA chemicals to the list of reportable chemicals.

Planning. The companies that report under the act are required to submit toxics use reduction plans in 1994. Actually, they have to submit to the department only a summary of their plan. We have just published the planning regulations. The Toxics Reduction Institute has developed a training program for TUR planners who are required to certify TUR plans.

Performance Standards. In 1995, we will stop and assess whether or not we're making progress toward the goal the Act sets forth, and if we are not, we have the authority to identify industries or user segments and set performance standards.

Multimedia Inspections. One of the things the TUR act requires us to do is multimedia inspections where possible. We got started on this before the Act was passed with the Blackstone Project. We had some nice successes with the project, and we learned some things we need to do more work on. We looked in-depth at information from companies we had visited more than once to determine whether they had actually implemented toxics use reduction strategies. We found that of the companies that were involved with all three agencies - DEP, Office of Technical Assistance, and the local POTW - 75 percent implemented TUR. So we found a very strong argument for coordinating work between the technical assistance and regulatory agencies. Armed with that and with models we developed, we have decided to go statewide with the Blackstone approach. We call the statewide program Waste Prevention FIRST. FIRST is an acronym for Facility-wide Inspection to Reduce Sources of Toxics. There are teams of inspectors in three of our four regional offices that are training to go out into the field and do multimedia inspections. In the fourth regional office, we have trained the entire field staff. All these field staff are coordinating and

conducting joint inspections with the pretreatment coordinators at the local POTW's whenever possible.

The Office of Technical Assistance staff have been grouped into regional teams to reflect DEP's structure. This association between OTA and DEP has enabled regulators to identify source reduction opportunities and refer companies that turn up through the inspection program. The TUR Institute is helping DEP develop 50-plus hours of draft training into an educational curriculum with an inspector's guidebook and training manuals.

We are also developing a whole facility classification system to help us allocate resources for doing business in this new way. We're trying to determine what kind of facilities we have across the state and how many people have to be trained, and to what level, in order to do first inspections. Once we get the training curriculum finished, we'll be training the staff who are not yet involved.

Enforcement. Along with the inspection effort, we've developed models for incorporating source reduction as an objective into our enforcement program. Every enforcement document includes a referral to: the Office of Technical Assistance—making the company aware of their services; the Toxic Use Reduction Institute—for information about the Toxics Use Reduction planner course; and the Department's Toxics Use Reduction Team—for guidance on toxics use reduction planning. We are also identifying other routine communication that can also be used to raise awareness of these services.

We are also using low-level enforcement (notices of noncompliance) to inform companies of potential source reduction opportunities. In the cover letter to our Notices of Noncompliance, we lay out our authority to take enforcement action and, at the end, we list the potential opportunities that our personnel have identified. We have found that just making companies aware of the opportunities is often an encouragement to the company to look into to it on its own. Having it in writing from the regulatory agency seems to make a difference.

Our experience with requiring toxics use reduction in consent orders is limited to two cases.

Permitting. This year, a DEP field office, will be the location for a project, along the lines of the Blackstone Project, that will develop means to incorporate source reduction into routine permitting.

Consolidated reporting. Another project is the development of consolidated reporting. It would begin with developing a facility-wide worksheet from which companies can pick off the information they need to fill out for all the reports required. From there we would identify overlaps and redundancies. The end goal would be to develop a consolidated report.

The Nevada Small Business Development Center Business Environmental Program

Kevin Dick
University of Nevada, Reno

Program Overview

The Nevada Small Business Development Center has established a Business Environmental Program to assist businesses with environmental management and pollution prevention. The program utilizes the Nevada Small Business Development Center (NSBDC) infrastructure which has been established with federal Small Business Administration (SBA) and state funds. This infrastructure consists of university based centers located in Reno, Las Vegas, and Elko and economic development and chamber of commerce affiliations in Winnemucca and Carson City. The program offers free and confidential assistance to businesses in Nevada.

The program was originally established and funded through a contract with the Nevada Division of Environmental Protection Waste Management Bureau. This contract was established for the Small Business Development Center to provide hazardous waste regulatory and minimization assistance to Nevada businesses. Last October, additional funding was received through an EPA Pollution Prevention Incentive for States (PPIS) grant. This grant allows the program to now provide multimedia pollution prevention assistance to Nevada businesses.

Assistance is provided through a number of mechanisms. A toll-free information line serves businesses throughout the state. Questions are answered and information provided over the phone or through follow-up informational mailings. The program also produces and distributes informational fact sheet and publishes a quarterly newsletter titled *The Nevada Waste Reporter*. Nevada has yet to establish a pollution prevention award program, but the newsletter features articles on Nevada businesses which are successful in establishing a corporate pollution prevention culture.

The program also periodically offers free seminars on hazardous waste management and pollution prevention at locations around the state. The program regularly presents information at trade association meetings and at trade shows and conventions held in Nevada. Program information is published in a number of trade association publications.

In addition, the program provides pollution prevention site assessments. These assessments consist of several hours spent at a facility discussing environmental management and conducting a walk-through to identify hazardous waste management compliance needs and multimedia pollution prevention opportunities. Informational materials are provided both during the assessments and as follow-up materials. A summary letter is prepared to document waste management issues and prevention opportunities for the business to consider.

Efficiencies of a Small Business Development Center Location

The program is run very efficiently due to the existing statewide infrastructure which has already been established with state and SBA funding. This structure has been established to provide businesses with counseling and information on traditional business management topics and needs. The Business Environmental Program represents an additional service available through the Small Business Development Center infrastructure. The front office facilities provide an area for publication display and distribution, and a receptionist, and even a conference and publication director are available to be utilized by the Business Environmental Program. The local offices throughout the state are available to work with area businesses for scheduling assessments and offering seminars outside the Reno area. Similar staff and facilities are available at these locations as well.

An additional advantage of the Small Business Development Center location is the existing relationship which has been established with businesses. The Small Business Development Centers are known by the business community as a source of information and assistance. A success of the program has been its ability to deal confidentially with the businesses as an entity that is well understood to be separate from the regulatory programs. Environmental Program information and services can be advertised to the business community during other NSBDC functions. In addition to advertising through NSBDC business program channels, inspectors from state and local air, water, and solid waste programs are distributing informational materials and program brochures.

Almost every state has an established Small Business Development infrastructure funded by the state and SBA. The advantages of this infrastructure as well as the need for pollution prevention to be an integral part of business management should be considered when selecting a location to house a pollution prevention assistance program. If a state pollution prevention program has already been established, the Small Business Development Center should again be considered as a vehicle to assist with the delivery of informational materials, publications, and seminars. In fact, their participation with an existing state or local pollution prevention program may be useful to them to demonstrate the effectiveness of their program to the state and SBA.

Need for Comprehensive Assistance Programs

The Nevada Business Environmental Program serves all Nevada businesses regardless of size. However, small businesses face an acute need for regulatory assistance. These businesses face separate regulatory programs for fire safety, workplace health and safety, air, water, hazardous waste, solid waste, materials inventory reporting, and hazardous materials transport. Implementation of these regulatory programs is fragmented and the degree and type of assistance offered by the various implementing agencies or arms of agencies varies dramatically. When funding is allocated (if it is) to support assistance efforts, funding is allocated separately for each regulatory program. Efforts to gain funding to create a comprehensive assistance program are "hit-or-miss" in this environment.

One of the great advantages of the PPIS funding and of the pollution prevention concept is that it cuts across traditional regulatory media barriers. However, combining regulatory and compliance assistance with pollution prevention efforts is critical for business implementation of prevention. The PPIS funding is not sufficient for our program to provide regulatory assistance in these many areas. Fortunately our existing state contract allows us to provide hazardous waste management assistance. We spend ten minutes during a site assessment to explain the range of environmental and safety regulatory program affecting businesses and the fact that we receive funding to help them with only one: hazardous waste management.

Much discussion has recently focused on over-regulation of businesses and how this can affect competitiveness and economic viability. Regulatory and technical assistance must be provided to small businesses in order to enable them to comply with regulations and prevent pollution. After all, that is the goal of these program. In today's regulatory environment, one must be an "expert" to be able to find the different sources of assistance for each regulatory program, if they exist at all. The multimedia programs being established to promote pollution prevention have an opportunity and a responsibility to weigh-in on the need for comprehensive regulatory assistance programs, and the need to establish funding means for such comprehensive programs. The time is ripe for this issue. Health and safety, and environmental compliance go hand-in-glove with prevention.

Resource Issues

The Business Environmental Program faces the issue of limited resource allocation which exceeds demand for the services we provide. The site assessment services we offer are certainly the most resource intensive. This is in spite of the fact that the assessments we conduct are much less rigorous than those conducted by other state programs. Already the trade-off has been made to provide more limited counseling services on waste management and pollution prevention opportunities. The goal is to provide businesses with information they need to make the necessary decisions. Obviously, work is required on the part of the business for this approach to succeed. Measuring the success of this approach is one of our next challenges which will also no doubt require resources which just are not available.

In spite of the resource drain involved with the site assessments, they are of great advantage to the program to remain familiar with different processes and technologies and to understand the assistance needs of the businesses. It is also the means of identifying the model businesses which we then feature in our newsletters.

The services provided by the program are best characterized as "counseling." The program can identify prevention opportunities and provide information and materials but does not become involved in design engineering services. However, a business which works with the program has a much better idea of what and how they can do things on their own, or with a vendor, and what benefits they might gain from working with a consultant.

Upcoming Grant Program

Nevada adopted a regulation last fall which will establish grant funding to businesses for source reduction and recycling of hazardous and industrial waste. Grants of up to $30,000 will be awarded to businesses submitting competitive proposals. The grant funding will be generated based on fees imposed on the U.S. Ecology hazardous waste landfill in Beatty. U.S. Ecology has entered lawsuits in federal and state court and the program is on hold pending outcome of the lawsuits.

Fire Assay Pollution Prevention Project

The gold and silver mining industry in Nevada uses both on-site and off-site fire assay labs for measurement of gold and silver content of ores and exploration samples. A lead litharge is used as flux in the assay process. This generates a lead contaminated cupel of crucible and slag. The lead is also often a source of workplace exposure in the lab. The lead contaminated debris exceeds the hazardous waste regulatory levels for lead and requires proper management. EPA only recently clarified their position on applicability of RCRA subtitle C to this waste stream.

A portion of the PPIS funding is going to the Laxalt Mineral Research Center at the University of Nevada, Reno. This project will explore alternative lab procedures to evaluate options to fire assay. In addition, the project will explore recycling options for the cupels, and the replacement of lead as the flux in the fire assay process.

SIX-STEP WASTE AUDIT AND PROGRAM IMPLEMENTATION

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Abstract

The reactionary approach to pollution—treatment and disposal—has been used for years. We are all painfully aware that this attempt to control pollution is not now and never has been effective. It was not until enforcement of stricter environmental regulations that we began to realize that treating wastes merely moves pollutants from one medium to another, and that the only realistic approach is to prevent or reduce waste at its source.

Source reduction where possible, coupled with recovery, reuse and recycling of wastes which cannot be stopped, results in pollution prevention. Before this prevention can take place, there must be a thorough understanding of what a waste is, where it comes from, what process practices create it, and what technologies are available to eliminate it.

A waste audit can provide such an understanding. The six simple audit steps can help identify the types, sources and quantities of wastes being generated. Additionally, it can pinpoint the practices and procedures which are resulting in waste generation. The final steps help to analyze the most cost-effective solution while providing the necessary waste management training to employees.

Introduction

With more stringent limits being placed on industrial dischargers, waste treatment is becoming a major expense. Facing ever-increasing treatment costs, yet having the desire to remain a good corporate neighbor has forced industry to investigate alternative technologies for the elimination of waste.

One such technology is the concept of pollution prevention and source reduction. This concept forces the re-evaluation of operating procedures and re-education regarding "waste" streams. Recovery, reuse or sale of "waste" has in some cases resulted in new profit sources. The first best step to this technology, and ultimately total waste management, is a waste audit.

Waste Audit: A Definition

A waste audit can be considered a first step, self-help process for determining the practices, procedures and operating parameters which have resulted in high waste loads, excess water usage, environmental noncompliance, and reduced profitability. An audit provides the basis for collection and evaluation of technical and economical data necessary to select appropriate waste reduction techniques. By identifying sources, quantities and general type of waste, appropriate technology can be applied which will allow source reduction and/or recovery of lost product. This can have both short- and long-term economic and environmental effects.

Benefits of Audits

A waste audit can result in cost savings through reduced loss of raw ingredients or products, reduced treatment costs and reduced environmental fines or surcharges. Additionally, new profit sources can be found through recovery of "waste" for reuse either within the plant or elsewhere.

An intangible but very real benefit of a waste audit is the elimination or prevention of bad publicity due to environmental noncompliance.

Steps of an Audit

There are six basic steps in a waste audit. When followed and combined with an employee training program, these steps can lead to a more efficient and profitable facility.

Step 1. Corporate Commitment. The first step to a successful waste audit and ultimately a waste management plan is corporate commitment. The establishment of a clear, concise, corporate commitment is imperative. Lack of corporate commitment is on of the most formidable opponents of waste reduction and proper waste management. Management's full commitment of time, personnel and financing is required if an effective program is to succeed.

A detailed written corporate policy regarding waste reduction should be established. Such a policy should not only outline policies and procedures for dealing with waste but should also detail corporate and personnel responsibilities for all waste related activities. Employees can sense the true degree of commitment set forth at the corporate level and will rise to or fall to whatever level is expected or allowed.

Step 2. Team Selection. Only after establishing a written corporate policy and distributing it to all managers and supervisor should an audit team be selected. A waste audit can be performed by a single person, an in-house team of employees or a team of hired consultants.

The team approach is preferable as it allows input from persons with a variety of perspectives and a broader knowledge base. Team members should come from every aspect of facility operation, from management to cleanup. Team members should be treated as equals with all ideas and concerns being heard and evaluated for merit. The different areas of expertise represented by each team member will produce differing areas and levels of concern. Remember, management is not always aware of or familiar with daily operations and concerns of the process line or cleanup crews.

The team leader should be technically competent and comfortable with the job. This comfort results from the knowledge that he has been given the authority to get the job done.

Step 3. Gather Background Data. In order to understand the hows and whys of waste generation, a thorough understanding of the facility is required. This understanding can be gained from assembling all available background data.

There are four basic types of data which should be collected: production/process information; waste stream information; economic information; general information. Some sources of this information are:

Production Processes

- Plant flow diagrams and plant blueprints (as built)
- Sewer locations: process/domestic/storm/city
- Purchasing and shipping records
- Material Safety Data Sheets
- Operating manuals
- Water use records (by shift and during down times)
- Potable water locations
- Production records/schedules

Waste Stream Information

- Manifests, annual reports and related RCRA information, SARA reporting data
- Environmental monitoring reports
- Environmental permits (solid waste, hazardous waste, NPDES, pretreatment, air emissions)
- Information on any regulatory violations
- Location of all waste collection/storage points
- Diagram of all waste treatment units with operating manuals
- Alternative waste disposal options

Economic Information

- Water and sewer costs (including pretreatment or on-site treatment)
- Solid and hazardous waste management costs
- Labor, energy and raw product cost
- Waste management contracts/billings

General Information

- Current recovery/reuse/recycle practices
- Previous environmental audits
- Vendor information

An aid to a more complete understanding of the facility and to constructing a flow diagram (Step 4) is to assemble certain background data in tabular form as it is collected. This allows for easy transfer to the flow diagram while serving as a useful reference for future activities. An example is the listing, in tabular form, of each unit process with a functional description and associated inputs, outputs, and waste streams. This listing should

include, in addition to major equipment, all ancillary processes. Even though they may not have a direct effect on processing, they can have a direct effect on the waste stream (example: cooling tower discharges). Another examples of information useful in tabular form is tracking of raw material from purchasing through each process to shipment of final product.

Step 4. Flow Diagram and Plant Survey Based on the gathered background data, a detailed flow diagram of the plant should be constructed. This will put the information into a visual, usable form. All inputs and outputs should be identified as to the source, quantity, type, and concentration.

All waste streams—liquid, solid, air—should be distinguished from product line. Cleaning/dumping and makeup activities should be noted along with any recovery/recycle/reuse efforts.

The background information, tabular information and the labeled flow diagram will help identify any data conflicts, problem areas and needed monitoring locations. It will further identify wastes that are particularly expensive to dispose of, are generated from expensive raw materials or are causing handling or discharge problems. With this information in hand it is time to conduct the actual in-plant survey. This survey is designed to verify existing data, find missing data, and look for additional waste streams.

In order to completely understand problems faced by the facility, a complete knowledge of each unit process, along with the interaction with other processes, is required. The tabular data compiled earlier on each unit process will be helpful during this phase.

If detailed data is not available on waste streams or water usage, or if new waste streams are identified ruing the survey, then sampling/monitoring should be conducted. Sampling/monitoring should be conducted over a period of time to assure accurate, representative samples. If a variety of products is run, separate sampling programs should be performed for each product. Water usage should be monitored in such a manner as to determine usage by shift and/or product. Data collected here can be added to the flow diagram and extrapolated to monthly or yearly figures.

In addition to collecting samples, it is extremely important to observe all processes and cleanup operations, from material receiving through product shipping. All shifts and activities should be observed on more than one occasion. The use of video cameras is also recommended, as a video provides a useful reference which can be used as a training tool. By observing the process cleanup activities and talking with line personnel, obvious waste-generating practices, such as dumping bad batches into floor drains, may become apparent. Tracing the path of all ingredients and chemicals (including disinfectants) from the loading dock through processing to find effect on waste streams, wasteful practices and procedures will become apparent. Additionally, having freedom to question policy and reasoning behind activities will provide further insight into resulting waste streams.

Step 5. Material Balance. Upon completion of the in-plant survey, all data should be reviewed and updated for accuracy and completeness. At this point, the following information should be available for each waste stream:

- point of origin
- current handling/treatment/disposal
- physical/chemical characteristics
- quantity generated
- rate of generation (lb/unit product)
- variations in generation rate
- potential for contamination or upset
- cost to manage

With all collected data, in-plant survey information and results of monitoring/sampling, the material balance can be performed. There are two basic balances performed, process-by-process and overall plant. It should be pointed out that these balances are mass quantities (what goes in minus what comes out equals waste generation).

The process-by-process balance should pinpoint areas of greatest waste generation and water usage. These areas/processes translate to points with the greatest potential for reduced water use, greatest waste reduction potential, waste elimination potential and/or recover/reuse/recycle opportunities.

The second material balance, the overall plant balance, considers activities not necessarily associated with a single unit process. Some areas to consider in this balance include but are not limited to:

- discharges to floor drains
- discharges to storm drains
- bypasses
- cleaners/disinfectants and biocides used
- operational, cleanup, maintenance procedures
- effects of outside personnel (delivery people and vehicles)

These two balances will pinpoint both obvious and obscure areas of waste and pollution generation.

Step 6. Evaluation of Reduction Alternatives. The exact procedure used to identify, evaluate, and select applicable reduction technologies will depend on the complexity of the plant and quantity/variety of wastes generated. Successful approaches have ranged from simple group discussions and manual evaluations by team members to complex and sophisticated computer modeling techniques. Approaches taken should contain the same basic four steps:

1. List all waste streams
2. Identify potential waste reduction techniques for each stream (i.e. brainstorm)
3. Evaluate all technical, economic and regulatory aspects of each technique
4. Based on life cycle costs, select the most cost-effective reduction techniques

All ideas generated during step 2, "brainstorming," should be considered. Often the simplest or most far-fetched suggestions can have the most positive impact.

In addition to process evaluations for specific waste streams, overall facility-wide reduction plans should be formulated. The facility-wide plans can include such items as

- recycling programs,
- material inventory/handling,
- maintenance/operating procedures,
- cleanup practices.

Upon identifying possible alternatives for consideration, an engineering (technical) and financial evaluation should be performed. The most cost-effective—technically and financially sound—based on life cycle costs, should be selected for implementation. Technical feasibility evaluations should include consultations with all regulatory and health/safety agencies, effect on product, applicability, reliability, O&M requirements, ease of implementation, and waste reduction potential.

Another part of the technical evaluation is the consideration of liability, both for the individual and company as a whole. Liability/risks are reduced as wastes are reduced; therefore, reducing off-site disposal reduces ultimate liability.

In addition to the technical analysis, a financial feasibility analysis must be performed. By using a life cycle cost analysis, a payback period can be calculated. All cost analysis should include capital expenditures and O&M costs. This should be weighed against treatment and disposal costs. All costs associated with the alternative should be considered such as: initial cost, replacement cost, energy cost, chemical cost, operations cost, etc. These costs should be weighed against the obvious treatment and disposal cost, and the not-so-obvious costs such as loss of raw material, loss of product, liability for waste generated, ever-changing and more complex environmental reporting requirements, more stringent environmental limits, public perception, actual treatment cost, tipping fees, and personal civil and criminal liability.

Once the complete technical and financial picture is complete, it will become apparent which alternatives can be implemented immediately and which will become long-range goals for an ongoing waste reduction plan. The alternative which can be implemented immediately should provide the "breathing room" required for a more detailed engineering and administrative approach to the long-term alternatives.

Implementation/Employee Training/Follow-Up

Implementation. The actual waste audit is now complete. Waste reduction alternatives have been selected. Establishing an implementation schedule is the first step that must be taken following an audit. The written corporate policy should have designated an employee responsible for setting a realistic implementation schedule, assuring the schedule is being met, assuring that there is no backsliding toward wasteful practices, and assuring environmental compliance. This employee should be a champion, a true believer in waste reduction.

This schedule can serve three major purposes. The first is to allow tracking of the progress that is being made toward a more efficient, less wasteful operation. The second is to keep the issue of waste reduction in the forefront of the company's daily activities. The third is a demonstration of "good faith" if there are current noncompliance or public relations problems associated with the facility.

Employee Training. The first alternative which should be implemented is an employee training program on dry cleanup procedures. Training programs should be both process specific and activity specific and should outline expectations for all employees from management to cleanup. All employees should be included and involved. The importance of the training programs should be made very apparent to the process line and cleanup personnel. Often this can be achieved by having upper management attend all training sessions.

Training sessions should be positive. Emphasis should be "this is a better approach," not "the old approach you were using was wrong." Most employees become willing, enthusiastic participants in a waste reduction program once they realize what a waste is (product can be waste!) and that their activities can have a positive effect on the environment, plant profitability, and, ultimately, their own job security. Training programs should be repeated on a regular basis and should allow for input and questions by employees.

Training should emphasize careful measurement, good housekeeping, and dry cleanup.

Follow-up. There are two types of follow-up: employee related and waste related. Many firms have discovered that the best follow-up to on-going employee training is an employee suggestion/awards program. Such programs keep enthusiasm high, generate pride, cost little, and offer large paybacks to the company.

One such program, P.A.W.™ (People Against Waste) was created by Maola Milk and Ice Cream in New Bern, NC. This program is designed to involve employees in the waste reduction program and encourage them to search for waste sources.

The success of this program hinges on the prompt and detailed response sent to each employee submitting a waste reduction suggestion. No suggestion is considered too small for response. This personal response is coupled with a visible reward, a P.A.W. lollipop, and the employee being recognized in a newsletter.

At the end of the month, top ideas receive additional recognition and rewards ranging from money to steak dinner gift certificates to P.A.W. caps. The awards increase for the best (most significant waste reduction) suggestions received during the year.

The keys to a the success of this kind of program are:

- Have a champion for the cause of waste reduction
- Prompt, detailed response to all suggestions

Remember, each employee, depending on his/her duties, will have a different area and level of concern.

The second area of follow-up is waste related. Initial data obtained ruing the audit can serve as a baseline from which improvement can be measured. An ongoing waste sampling, water use monitoring program should be established.

Monitoring/sampling results can be evaluated per process, per shift or per unit product to determine the progress that is being made as well as to identify areas which need additional attention or tend to backslide. Such data, when presented understandably, can go a long way toward boosting employee pride and enthusiasm. One such presentation is a large obviously located graph depicting water use, waste loads to the sewer, and/or solid waste generation. Such graphs are visual reminders of a job well done or that backsliding is occurring. Company-wide rewards can be offered for achieving present goals marked on the graphs.

LOW TECH WASTE REDUCTION - THE EQUITY STORY

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Abstract

The food processing industry is very diverse. The diversity of the industry is apparent not only by the vast array of final products but also by the waste generated. Food processing waste, though not considered to be a health hazard, can be formidable in the quantities generated. Even the smallest seasonal plant is capable of producing waste loads equivalent to a population of 15,000-25,000 people. Sludge generated from process wastewater treatment coupled with solid waste generation occurring during product handling and processing can result in waste that are both difficult and expensive to handle.

The increased cost of end-of-pipe treatment technologies and solid waste disposal coupled with the negative public impact of environmental non-compliance has forced the food industry to investigate alternate approaches to their waste problem. The approach that has proven itself both financially and technically feasible is waste reduction. The food industry, more than any other industry, is fortunate in that low tech waste reduction is extremely effective in reducing waste generation, waster usage and their associated costs.

This paper will present the steps which have been proven to be effective in reducing waste generation in food processing. The information will be validated by documented results from the Equity Group, a producer of breaded chicken nuggets, located in Reidsville, NC.

Types of Waste

Before an effective waste reduction program can be implemented, an understanding of what a waste is, and, how and where it originates is required. Food processing waste can be broken into two categories; direct and indirect.

Direct wastes are those waste that can be accounted for in the dumpster or inedible bins. These waste occur as raw ingredients are stored, transferred and processed. Direct waste can be classified as intentional and unintentional.

Intentional wastes are wastes that are expected such as peelings and pits from vegetable processing; blood and bones from meat processing; bread and dough from bakeries; and wash down water from all processors. Unintentional waste are those waste resulting from poor inventory control, improper employee management, and improper storage. Examples of unintentional wastes include losses attributable to spoilage while in storage; improperly supervised clean up; losses due to improper equipment maintenance, etc. Direct waste, whether intentional or unintentional, is comprised of lost product ingredients and semi or fully processed product.

Indirect waste is a result of direct waste lost down the drain. Product or raw ingredients lost down the drain results in wastewater which must be treated which leads to the formation of sludge.

Sludge generation is dependent on the type of food being processed, the type of wastewater treatment used, and the amount of food lost down the drain. There is a direct correlation to food lost down the drain and wastewater strength. One pound of Biochemical Oxygen Demand (BOD), the pollutant measure most used by municipalities, is equivalent to 0.89 pounds of fat, 1.03 pounds of protein, and 0.65 pounds of carbohydrate.

Identifying Reduction Opportunities

Inaccurate record keeping and low waste disposal and treatment costs or lack of disposal problems have lulled management into thinking waste loads and water usage are within acceptable limits. As management realizes that efficiently run wet processing plants should only lose 2-5% of input ingredients, they become aware of the losses they are incurring. This coupled with increased wastewater treatment and solid waste disposal costs as well as public scrutiny have forced management to reevaluate operational procedure.

The best and quickest approach to identifying waste reduction opportunities is by conducting a waste audit or waste assessment. This approach can be performed in house or by outside consultants. There are six basic steps to this process.

First and foremost is corporate commitment. Lack of corporate commitment is the most formidable obstacle to waste reduction. The establishment of a clear, concise corporate policy regarding waste is imperative. Employees have a sixth sense when it comes to the true level of corporate commitment and they will rise to or fall to the level that is expected of them.

Step two is choosing a team to conduct the audit or assessment. An audit or assessment can be conducted by an outside firm; however, plant employees know the facility better than anyone. Audits/assessments can be conducted by an individual; however, a team approach with members from every department will provide a better insight and broader base to work from. There should be representation from management, shipping/receiving, QA/QC, maintenance, process line, cleanup engineering, etc. and they should all be treated as equals. In addition, if there is a "sister" plant it may be advisable to have a representative from that plant involved. This will allow someone who has knowledge of the process but isn't involved with it on a day to day basis to look at it with "fresh eyes". Many times daily procedures are taken for granted. also it will provide for input from someone who has no fears, imaginary or otherwise, of repercussions.

The third step involves gathering of background information. This includes all available information from the following areas: production/processing, waste management, economic/financial, and general(vendor information, previous studies etc.). This data should

provide some correlations between waste produced, water usage per unit process and/or indicate what production activities resulted in significant waste generation. Further it should indicate if inventory control (spoilage) has been a problem in the past or if environmental noncompliance is chronic.

Assemblage of this data will result in a formidable collection of material which must be put in a usable form. Step four, with its two parts, allows the information to be used in establishing a flow chart which tracks ingredients from the receiving dock through processing to product or waste. The creation of a simple flow chart which shows each input and output per process directs the team toward opportunity areas as well as identifying data gaps. The second portion of this step is to go into the plant and observe all actual operations and perform any monitoring that is needed to fill data gaps. If there is questions about a process or procedure the team members should be free to talk with the line workers. Asking "why" or "why not" about given activities often reveals reasons of "because we've always done it this way" or "because I was told too." Sound technical reasoning will be lacking when wasteful practices are discovered. The worse, but frequently response, is "I told management about the problem (situation) and they did nothing about it so why should I care?"

Step five requires that you take information from the survey and insert it into the flow chart and perform a mass balance. As the term implies this is a "mass" balance. The desire here is not to account for every microbe of ingredient, product or waste but rather to get a feel for the amount of incoming ingredients, the amount of finished product, and what is left over as being waste. There are two basic mass balances that should be performed. The first is process by process. This will pin point individual processes are the most wasteful and water intensive. The second balance is an overall plant balance. This will evaluate activities which are not specific to an individual process such as cleanup, batch dumping, etc. This balance often identifies areas where a change in employee attitude is required.

Now that all the information on plant processes and waste generation has been assembled and the areas of concern have been identified it is time to move to the sixth and final step. This step consists of alternatives evaluation. Technical and economic evaluations are performed to determine the feasibility of waste reduction options. These options could include such approaches as chemical substitution, processes modification, on-site recycle programs, off-site recycle programs, etc.

One of the most effective approaches for the food industry is training employees as to what a waste is, where it comes from, the effect wastes can have on the environment and their jobs, and proper dry cleanup activities. For all industries employee training should be the first option implemented with other approached to follow. Employees are the first line of defense. Without their involvement any waste reduction plan is doomed to failure. Employee training programs, improved maintenance programs, water reduction programs, and employee involvement programs are all vital ingredients in the low tech approach to waste reduction.

The Equity Story

Background. The Equity story began in June 1987 and is ongoing. Equity Group, located in Reidsville, NC, was producing approximately 2.5 million breaded chicken nuggets daily. The process involved the grinding and blending of high quality chicken meat, formation of chicken nuggets which were then battered, breaded, rebattered with Tempura, fried frozen and packaged. The plant which employed 275 people on two production shifts and one cleanup shift operated five to six days a week. The operation was using approximately 200,000 gallons of water daily and discharging wastewater with a daily BOD loading of 4,500 pounds. Even at these levels of discharge, it was not until the implementation of a new sewer use ordinance, which included pretreatment limits and surcharge levels in June of 1987 that excess waste generation in the facility was recognized.

The Problem. The traditional approach to food processing was practiced by Equity. High production quality and sanitation standards translated into high water usage. Additionally, the requirements of the U.S. Department of Agriculture (USDA) requiring all production lines to be free of any meat accumulation while in operation were interpreted as requiring all equipment to be hosed down three times per shift. The result was a tenfold increase in water usage and waste production. Since discharge of waste materials had not presented a problem in the past standard operating procedure was to flush waste food ingredients down the drain to the pretreatment plant. On an average, the per shift food loss to the drains was 55 pounds of chicken meat, 3 pounds of tempura and 15 pounds of dry batter per production line.

During this same period, the City of Reidsville was fined for noncompliance with their wastewater discharge limits. Subsequent analysis revealed that the city's wastewater treatment plant was incapable of handling incoming wastewater at the loading levels that were being received. This resulted in a new sewer use ordinance being adopted by the City of Reidsville. The new ordinance established stringent pretreatment limits and heavy surcharge levels. Equity's BOD loadings were well above the established limits and therefore were very costly.

Initial Response. Equity took immediate action upon notification of the city's wastewater treatment problem, the new discharge limits, and the increased surcharges for BOD. A committee was formed and charged with the task of investigating all approaches to reducing waste loadings that were being discharged to the city. The committee was chaired by the director of personnel who contacted the NC Pollution Prevention Program (PPP) and the Agricultural Extension Service (Ag. Extension). Use of the director of personnel in this capacity placed a people oriented person who had no preconceived ideas about what could and couldn't be done with regard to technical problems and waste treatment at the helm of the program. The lack of preconceived ideas coupled with the employee trust were very valuable assets.

Technical Assistance. In July and August of 1987 preliminary waste surveys were performed by specialist from PPP and Ag. Extension. It was at this point that the severity of

the problem became apparent. A report outlining operational and cleanup procedures was submitted to Equity and a preliminary training program for selected managers and line supervisors was held.

This initial training program was used to acquaint attendees with wastewater terminology as well as to inform them of the difficulties that Equity was having with their wastewater discharge. Additionally it was pointed out that these wastewater problems were a result of hosing batter and meat into the drains and a new policy of keeping the food off the floor and out of the drains would be implemented.

The traditional approach to waste problems taken by Equity had been pretreatment. Since waste reduction and pollution prevention was a new approach they applied for and received a grant from NC PPP to establish and implement a waste reduction program.

Identification. Since a preliminary survey had been performed and discussed, managers and line supervisors were prepared when a more detailed water and waste survey was conducted. This survey consisted of observing and photographing processing and cleanup activities. Photography included the use of both still camera shots and video recording. Additionally monitoring and testing was performed on water usage and waste generation by shift and during periodic points through the day.

This detailed survey revealed that solid waste such as fat, raw chicken bits, dry batter (breading) and proceed nuggets were being washed down the drain. Liquid wastes finding their way to the drain included chicken blood, juice, and tempura batter. Additionally, the survey showed that over half of the waste load resulted from the cleanup.

Closer examination of the problem revealed that solid waste was being washed down the drain because there was no alternate disposal option and because there were no containment (catch pans) facilities to capture crumbs, flour, oil, etc. that was lost during product transfer. It also became apparent that waste was being generated because of worn-out equipment, missing gaskets, misaligned conveyors, leaking valves and lines, and a general lack of routine maintenance.

The most serious problem was the lack of communication between management, the line workers, maintenance staff, and the cleanup crew. The line workers were unaware that their actions could have a direct affect on wastewater problems. They had not been trained in dry cleanup practices. The maintenance approach was "if it ain't broke don't fix it" and, cleanup functioned under the misconception that more water used in cleanup translated into a better job done.

Dry Cleanup. The dry cleanup approach took on two phases. The first portion was to provide containers for the collection and separation of solid and liquid waste. These containers included catch pans under equipment where product was lost during transfer as well as containers into which employees place dry waste that accumulated on their equipment

or was on the floor. Catch pans were also emptied into these containers. With containers in place, supervisors instructed their employees as to proper dry cleanup methods which involve removing ALL dry ingredients from the floor and equipment prior to cleaning with water. Any wet ingredients were collected separately from dry wastes. By 1988, this basic training had resulted in a 50 percent reduction of the BOD loading in the wastewater.

The effectiveness of dry cleanup was not only demonstrated in the BOD reduction but in the amount of solid waste which was being accumulated. The collected solid waste is for the most part carbohydrate and protein based and therefore marketable. Over 5,000,000 pounds per year are being sent off site for use as animal feed with the remaining being sent to a rendered. This resulted in approximately 30 ton/week of solid waste being removed from the landfill in 1988.

The quantity of solid waste generated, which was previously hidden in the wastewater, resulted in the evaluation of the processes. This evaluation focused on the manner in which chicken blending took place, the quantities of batter formulated, and the manner in which ingredients were being used. This approach was used to reduce the actual generation of the waste.

The Program Continues. Even though the Grant from PPP ended in 1988, Equity's commitment to waste reduction continues. This is evident by their more recent efforts.

In October 1989, each and every employee at Equity was involved in an in-depth training program. Each shift was broken into half or thirds in order that production continue and group size be limited. Training was performed at this level and using terminology that did not intimidate or confuse the line workers but was upscaled for management. Separate presentations were made to production line workers, cleanup crew, supervisors, and management. A member of management attended each presentation to emphasize corporate commitment.

Employee training took place in the conference room using slides of actual plant activities. Employees were trained as to what a waste was; where it came from; the effect it could have on the environment; the effect that the increased sewer charges were having on profitability; and how that could affect their jobs. All training was very positive. Employees were not condemned for previously acceptable practices, instead the situation of how standards had changed was explained. With this explanation came training in dry cleanup and water saving procedures. Viewing a slide presentation of process and cleanup activities in a nice, comfortable surrounding made wasteful activities very apparent; however, with the positive nature of the training no one felt that they were being blamed or being made the scape goat. During this training they were told that management wanted to know what could be done to make their jobs easier and less wasteful, if there was any special equipment that would help or if they had any ideas on the subject.

Once employees realized that food was in fact a waste once it hit the floor and that their work ethics could have a positive impact on the environment they became enthusiastic participants in the waste reduction program. The effectiveness of this low cost and low tech approach is apparent by the reduction of wastewater pollutant loadings realized. In October 1989 TSS (Total Suspended Solids) and BOD (Biochemical Oxygen Demand) loadings in the wastewater were in the 2,500 mg/l range. Following the training they dropped to the 300 mg/l range. This translated to a $10,000 per month sewer surcharge savings.

With enthusiasm about the environment high and employee concern at a peak, Equity made the decision to start an environmental employee involvement group. Thus, the Waste Awareness Program (WAP) was born. Initiated in October 1989, it was not until after the first of the year that real activity began. The WAP committee is composed of workers from company departments and shifts. Employees are rotated on and off the committee periodically in order to insure total employee involvement and maintain fresh approaches to the complex waste issues. Committee members receive patches to wear on their uniforms. The committee's input has been effective as waste loadings have continued to decline.

Most recently Equity has noticed that water usage has begun to increase slightly. Management was determined to nip this in the bud early on and implemented a water reduction program as part of the WAP. Additionally new approaches to solid waste management have recently been tested utilizing equipment that had been removed from service. Initial results indicated this will result in batter becoming a marketable commodity without the current handling requirements.

The Last Step. Even with a waste reduction program like Equity WAP, most food processing plants need some form of pretreatment. The very nature of their waste, totally organic, makes this a necessity. Equity is no different. They have in fact over the past several years invested money in upgrading their wastewater pretreatment facility. This consists of an aeration basin, and air scrubber, a hydro-float system and a belt press. The unique part of this system is that solids residue produced by the pretreatment process is being sold to renderers.

The waste reduction approaches within the plant have resulted in reduced loading to the pretreatment facility and less energy required for aeration and reduced pretreatment costs.

Summary

The director of personnel for Equity, Jim Waynick, was the key ingredient in the initial and ongoing success of their waste reduction program. His management skills of people coupled with his lack of preconceived ideas made him a champion of the cause. Mr. Waynick recently compared waste reduction to alcoholism. He referred to it as WASTEAHOLISM. As he so aptly put it, "Waste reduction is very much like alcoholism. First there is denial: "No, I don't have a problem." Then comes admitting there might be a problem: "Well, maybe I have a problem but it is not that bad and it would be easy to fix."

Then comes acceptance: "Well, yes, I do have a problem and it is going to take some real effort to fix."

Mr Waynick continued the analogy by saying that just like with alcoholism you are never cured of wasteaholism. It is always an ongoing cure and that if you ever let you guard down wasteful practices will reoccur and ruin any progress that might have been made.

Low tech approaches to waste reduction are very effective but they do require a champion that believes it can work, corporate commitment, a change in attitude, and employees involvement. Each of these ingredients is critical to the success of a program. As Equity proved, it is not a one shot program but rather an active, living program.

Remember to start small, start simple, and look for the basics. Low tech approaches to waste reduction are understood and accepted by the employee. Low tech approaches to waste reduction can be implemented by the employee. Since the first line of defense against waste is the employee, low tech approaches are the logical choice.

TVA's Pollution Prevention Activities

Carroll Duggan

TVA Facilities Waste Reduction Assessments

In January 1992, TVA's Facility Services Group requested the Regional Waste Management Department to assist them in performing waste reduction assessments at all of the TVA facilities for which they have responsibility. This includes all of the Knoxville and Chattanooga, TN, facilities, most of the Muscle Shoals, AL, facilities, and the motor pools in Nashville, TN, and Golden Pond, KY, (LBL) for a total of about 30 buildings.

This was accomplished by selecting Waste Reduction Coordinators at the various installations, training them for two days in waste reduction techniques and including them on a team with experienced retired professionals (from the Tennessee, North Carolina, and Alabama WRATT programs). The waste reduction reports resulting from these assessments will form the basis for waste reduction facility plans with a goal of essentially eliminating generation of all hazardous wastes.

One major accomplishment of this effort was the initiation of a demonstration recycling project for the Knoxville facilities. Previously TVA had operated a recycling pickup and a trash pickup. This procedure was not working as well as anticipated due to low employee participation and the high costs. A new contract was awarded to pick up all (with the exception of infectious and construction wastes) solid waste generated in the TVA Knoxville facilities. The wastes are taken to the contractor facilities where they segregate and sell all economically feasible recyclables. The remainder is sent to the sanitary landfill. This project will operate on a trail basis for three months. At the end of the three months, data collected will serve as the basis for a RFP for a long-term contract. The feasibility for this type of project is due to the high fraction of paper (about 95 percent) in the waste stream and the contractor's ability to sell directly to the mill. Employees are encouraged to avoid contaminating their waste baskets. It is anticipated that this will save TVA approximately $3,000 per month and allow maximum recycling of wastes.

Retirees in EPA Region IV

Often the retired professionals working in EPA Region IV State Waste Reduction Assistance Programs feel out of the mainstream of day-to-day happenings in waste reduction. Also, as pointed out in Region IV's fall "Regional Roundtable," there was no easy way for a state program to request help from retirees in another state program. There was no regional association (other than the Roundtable) among the 100 or so retirees in the state programs in the Southeast. As a first step in resolving these concerns, TVA offered to coordinate an information and publications mailing list with the help of the State program to fill some of the needs of the retirees. All of the retirees in the state programs now are on a mailing list for 11 pollution prevention related publications. On occasion, they are sent special mailing of information on programs such as "Greenlights."

Other Activities

TVA continues to support waste reduction through training, technical assistance, and research and development activities. Support is provided to TVA's three primary operating groups (Resource, Customer, and Generating). Environmental orientation seminars have been conducted for field staff throughout the seven state service areas. Similar workshops are planned for TVA's 160 power distributors. Several research activities are presently being conducted through the Alabama Universities, TVA Research Consortium (AUTRC), and TVA's National Fertilizer and Environmental Research Center (NFERC). Support for the Southeast Waste Reduction Resource Center and WRATT Retiree Technology Transfer activities continue. Establishment of a Waste Reduction Foundation in Alabama is a top priority initiation for fiscal year 1992.

Duke Power Company's Customer Environmental Action Program

W. Roger Paules, Jr. P.E.
Program Director, Electrotechnology Sales
Power Marketing Department

When you leave this conference, I know you will all think a little kindlier of Stephanie Richardson and the staff of the N.C. Pollution Prevention Program. Their efforts to help industry in North Carolina are to be commended as are Stephanie's efforts in facilitating this conference.

Another impression that I hope you will take away is the realization that a valuable, untapped resource exists in each of our states in the marketing departments of our local electric utilities. Helping our customers remain competitive in a global marketplace is a common goal of Duke Power Company and the North Carolina Pollution Prevention Program. As my remarks today will illustrate, a valuable partnership develops when we work together to achieve a common goal.

Duke Power Co.

To give you an overview, Duke Power Co. is the seventh largest investor-owned electric utility in the United States. We supply electricity to 4.6 million people in a 20,000-square-mile service area in North Carolina and South Carolina.

Of the 1.6 million customers that we serve, only half of one percent are classified as manufacturing customers. However, this group of 8,740 customers consumes 38.7 percent of all energy produced by Duke Power and accounts for approximately 36 percent of total revenues.

Within the manufacturing market sector, the textile industry is the largest consumer, accounting for 43.9 percent of the electrical energy. Machinery and equipment fabrication are the second largest manufacturing category, consuming 12.3 percent. Next are chemicals and allied products at 9.2 percent, and paper and allied products is fourth at 8.0 percent. Finally, furniture manufacturing is a significant industry in North Carolina, not because it uses much energy—only 4.2 percent of the manufacturing group total—but because it is the second largest employer in the state.

How do we meet the needs of these customers? Duke Power has 78 power marketing representatives who contact industrial and commercial customers on a regular basis to provide guidance on the wise use of electricity. Through these contacts, customers tell us the issues most important to them. I can summarize these concerns in two categories:

1. Global competitiveness, which demands producing higher quality products at lower costs through increases in production and labor efficiencies; and

2. Compliance with current and pending environmental regulations by eliminating, reducing or managing all forms of waste.

Responsible businesses know their survival and profitability in today's competitive climate require the highest level of commitment to environmental quality. If the 1980s were the years of social gratification, the 1990s have just as quickly become the decade of the environment. No other subject gets the attention of the world today as dramatically and as fully as the environment.

Our environmental programs are aimed at solving customers' problems. Targeting manufacturing customers, we began promoting waste heat recovery in 1987. Within two years, we were providing training on innovative ways to heat, cure or dry material using ultraviolet, infrared and dielectric energy sources.

A growing number of electrotechnologies have been integrated into our current Customer Environmental Action Program. Our goal is not to force new technology on a customer or even to sell more electricity. Our goal is to build a long-term partnership with customers involving our product and services so that our customers have a competitive edge and a healthy environment.

During the summer of 1991, our marketing department identified a team of technical experts across Duke Power as a support group for our industrial and commercial customers. This is that untapped resource in your local utility that I talked about earlier.

Among electric utilities, Duke Power Company is unique in that we design and build our power plants. This depth of knowledge and experience acquired through building and maintaining coal, hydro and nuclear power plants is now easily accessible to our customers. For example, we have a strong team of experts on permitting, underground tanks, fly ash disposal, and boiler efficiencies. We offer free consultation from these internal experts to our customers looking for solutions to environmental issues.

If a more detailed analysis is required, Duke has several subsidiaries which can provide more in-depth services for a fee. Duke Engineering Services, Inc., Duke/Fluor Daniel, or Duke Energy Corporation offer project management, conduct technical assessments and provide engineering support. They can also design and build cogeneration plants.

What kind of results have we delivered through our Customer Environmental Action Team? Here are a few examples:

1. A mechanical vapor recompression heat pump was installed at Bowater's paper production facility in Catawba, SC, to capture waste heat @ 19 psig to be reused in their process @ 57 psig. Cost for the project was $1.5 million and the payback was 1.5 years.

2. A second application for a process heat pump was identified at Bowater through a joint-study funded by Duke Power Co. and the Department of Energy. Projected savings for the customer are another $1 million per year.

3. A third project is nearing completion at Bowater, Inc. in which we are investigating the possibility of removing color and VOCs from the wastewater effluent using ozonation. Duke Power invited a consultant, Black and Veatch, to prepare a proposal for this pilot project. When the cost was determined to be around $200,000, Duke went to the Electric Power Research Institute (EPRI) for financial assistance. EPRI proposed this as a collaborative project to all its members and the project was fully funded by EPRI, other utilities, and eight pulp and paper companies.

4. A closed-cycle process heat pump was installed at American & Efird's dyeing facility in Mt. Holly, NC. This $400,000 project had a 1.8-year payback. Not only is it saving the customer energy, but this solution also reduced wastewater discharge, eliminating a potential temperature problem.

5. Use of a reverse Brayton cycle heat pump enabled Vitafoam to recover solvents used as a blowing agent in manufacturing foam at its facility in High Point, NC.

6. The 3M Company took a similar approach, using a 200-horsepower reverse Brayton heat pump to recover solvents from a film coating line at its Greenville, SC, facility.

7. Duke produced a case study on the use of microwave disinfection to treat medical waste at Forsyth Memorial Hospital in Winston-Salem, NC. The costs of disposing of hazardous waste dropped to $60,000 a year from $270,000. The hospital purchased a $600,000 ABB Sanitec microwave system instead of building a $3 million incinerator.

As you can see, we've been busy. We were also being pulled in many directions and needed a systematic approach for our program. To define our direction and mission, Duke developed a training roadmap for our marketing managers and field reps. The Electrification Council offered an industrial environmental action course. A study manual was produced by the Center for Hazardous Materials Research at the University of Pittsburgh, as primary contractor, in partnership with a review team which included Environmental Specialist Steve Smith from Duke Power.

The course contents, after 18 months of work, are:

Unit 1: Industrial Environmental Overview (IEA) Overview
Unit 2: Regulatory Overview

Unit 3: Waste Reduction, Recycle and Reuse
Unit 4: Waste Treatment and Disposal
Unit 5: Components of the Environmental Assessment
Unit 6: Technical/Economic Feasibility Analysis and Completing the Plan
Unit 7: Sources of Information and Assistance

Instructors come from many backgrounds and outside Duke Power as needed. For example, the North Carolina Pollution Prevention Program team teaches the section on reduction/recycling/reuse, and a Duke Power lawyer takes course participants through an overview of current regulations.

Case studies and group problem solving exercises make this class an exciting and interactive experience. We have completed three of five planned classes for Duke employees this year. Materials have been well received, and we are on schedule to begin a series of classes tailored for our customers in September.

Another avenue for problem-solving available to our customers is the Industrial Electrotechnologies Laboratory (IEL) at North Carolina State University's College of Textiles. I encourage you to tour this working lab on Friday.

The lab is funded by Carolina Power & Light Co., Duke Power Co., Nantahala Power & Light Co., N.C. Electric Membership Corporation and North Carolina Power through the North Carolina Alternative Energy Corporation. Test equipment includes long, medium and short wave infrared, batch and continuous radio frequency dryers; vacuum microwave equipment; and a motor test facility which can test motors between 3 and 125 horsepower.

You can also see demonstrations of high efficiency indoor lighting, both fluorescent and high intensity discharge; computer integrated manufacturing; and ultrasound dyeing. This equipment is available free of charge to all customers served by Duke Power Co. and North Carolina customers served by the other sponsoring utilities. The annual operating budget for this working lab is approximately $1 million.

At Duke Power, we're focused on helping our customers find solutions to increase production, improve quality and address environmental issues. We believe business and industry can work together to use technology and innovation to achieve growth and safeguard our natural resources for the future.

If you have questions about any of the programs or opportunities that I've described, please feel free to call me at (704) 373-7973. Thank you for inviting me to be part of your conference.

Data Collection Work Group Report

David Thomas, Director
Hazardous Waste Research and Information Center
Champaign, IL

Some 16 people participated in the data group. Issues of concern to the group were the quality of the data, ability to use numbers from different databases (i.e. RCRA and TRI) and uses of TRI to determine release reduction/pollution prevention.

It was clear that various members of the group had different needs for the data. University and state technical assistance programs needed data on particular process changes and pollution prevention projects. These data could then be used to determine the success of particular projects (amount of waste reduced) which would be useful in technology transfer efforts. Regulatory agency personnel needed information that related to various media releases and assurances that compliance in all media was being maintained. Industry data needs were for evaluation of pollution prevention program effectiveness and cost/benefits analysis. There was a feeling that a lot of data are being collected that have little use to anyone.

While TRI has had a national impact on moving many companies to reduce releases, the data cannot be used as measures of pollution prevention. Many felt that specific follow-up with companies that showed significant reductions in releases could generate data on successful pollution prevention projects.

Some generic questions were asked by the group, such as "what is the reason we are collecting these data." Some felt that the process of collecting the data would prompt companies to think about the waste they are generating and would give them some of the numbers they need to consider options to reduce waste. From the public's point of view, the data illustrate the amount of releases to the surrounding environment and point out possible areas of concern. An industry representative stated that industry's measure of success is determining from the data on waste generation how well they are doing on reducing releases and protecting the environment around the plant.

Much of the discussion focused on the new Form R[1] to be required by the Pollution Prevention Act of 1990. This form is being held up by OMB, although EPA feels that it has addressed some of the earlier criticisms of the form by industry. One of these involved the definition of a waste, particularly in regard to intermediate chemicals generated within a facility. This also relates to the question of what a product is.

Discussion occurred related to what measurements will be or should be required to determine the effectiveness of pollution prevention projects. Massachusetts has required that

[1] The Form R was released and was being made available to generators during the last week of May.

ratios of toxic chemical use to a measure of production for a particular year be compared to the previous year. Industry (Chemical Manufacturers Association) has suggested using an activity ratio for each process which would be multiplied by the waste generated by that process and divided by the amount of waste. Form R as proposed would require companies to come up with an index (no units) of production or activity level. If the number between two years (i.e. comparing widgets or man hours) is greater than one, then the activity level has increased; if less than one, then the activity level has decreased. With any of the above methods, one may or may not be able to quantify the waste reduced due to a particular pollution prevention strategy or technology.

This is a complex topic which will require further discussion and analysis. We need to be clear about what questions we want answered and whether the data we are requesting will provide us with the answer. John Warren raised the issue that we may be using command-and-control thinking for pollution prevention. All agreed that we need quality data and consistency in the data from year to year.

Retired Engineers Work Group Report

Bob Carter

The Retired Engineers Group consisted of two TVA representatives; States of Idaho, Connecticut, Minnesota; Region IV's Chemical Audit Program, and the Center for Hazardous Material Research. Connecticut has just begun a technical assistance program using retired engineers. All were interested in the following considerations related to the use of retired engineers:

* Effectiveness
* Pros & Cons of their use
* Cost and Funding
* Liability
* Relationship with Compliance Programs (none)
* Administration

Pros

Retired engineers bring:

* experience,
* process knowledge (must be verified),
* communications/listening skills,
* problem solving skills, and
* they are inexpensive.

Cons

Factors which may negatively impact program:

* Past experience must be tempered with extensive orientation and training.
* Quality of reports, depth of services, attention to the right details varies individually.
* Availability cannot be assumed on short notice.
* Length of audits and results expected must be clearly communicated.
* Continuous good health can be problem with older retirees. Physical demands must be considered when assigning tasks.
* Process specific waste reduction training is required.

TVA controls liability through personal service contracts with retirees and liability release letters signed by clients. Retirees are paid $8 to $10 per hour plus expenses on a part-time basis. Full time (40 hours) contract employees are paid slightly more. Waste audits range from $1,000 to $2,500 maximum.

Summary

If used properly, retired engineers are an excellent resource. They must be given front-end guidance and training and receive feed-back on performance and recognition for accomplishments as with any employee. Their work ethic, dedication, and maturity will pay great dividends if used within their competencies and applicable experiences.

Solvent Substitutes
Technology Discussion Group

Mitch Kennedy
Massachusetts Office of Technical Assistance

The focus group started by discussing the Massachusetts Solvents Bazaar. The Solvents Bazaar brought together vendors of alternative cleaners and users with sample parts to be cleaned for cleaning demonstrations and problem discussion. The Bazaar featured twenty different types of cleaning technologies and attracted over 300 of New England's largest companies. It was found through the evaluations that more attention needs to be spent on optical glass and laboratory cleaning practices.

The group talked briefly about the need to look first at the reason the parts get dirty and try to change manufacturing practices or control soils on incoming stock. Mitch gave examples of companies that had worked with their customers and suppliers to eliminate the soils on incoming stock and parts. Various methods were used by these companies ranging from charging the customer for the cost of cleaning the parts to buying out the supplier and instituting changes at the supplier's facility.

The discussion shifted to the need for high-quality information on the state-of-the-art in solvent substitution. This brought up the issue of technology transfer and the role of the Roundtable. The Roundtable should look into developing a bibliography of quality documents and contacts in state programs.

The following were offered as a beginning for the bibliography

"Aqueous Cleaning." *CFC Alternatives* February 1991. Bulletin of the City of Irvine, CA, Environmental Program Office. (714/724-6251)

"Reducing Solvent Use in Vapor Degreasers and Dryers." ND. Bulletin of Commonwealth of Massachusetts Executive Office of Environmental Affairs, Office of Technical Assistance. (Room 1904, 100 Cambridge St., Boston, MA 02202 617/727-3260)

Quitmeyer, JoAnn A. 1990. "New Technology Alkaline Cleaners Replace Chlorinated Solvent Degreasers in the Metalworking Industry." Paper presented at the New England Environmental Exposition, Boston, MA, April 11, 1990. (Quitmeyer is a research associate in the Dewey and Almy Chemical Division of W.R. Grace & Co., 55 Hayden Ave, Lexington, MA 02173 617/861-6600.)

"Coming Clean with Solvent Substitutes." *Mass Reduction*, Bulletin of the Massachusetts Office of Technical Assistance for Toxics Use Reduction. (Suite 1904, 100 Cambridge St., Boston, MA 02202 617/727-3260. Lists vendors at 1991 Solvents Bazaar.)

Paints and Coatings
Technology Discussion Group Report

Sharon Johnson
North Carolina Pollution Prevention Program

Discussion centered on existing technologies that are being used in industry to reduce waste streams in various coating processes and some research that is going on to develop new technologies.

EPA Office of Research and Development is working on several coatings projects, including low-VOC resins for the furniture industry and projects to evaluate different spray guns. They have also sponsored a workshop on surface-coating-free materials. Another workshop is planned for May 1993. Some industries are looking at using unpainted materials (for instance airplanes).

Paint vendors are evaluating water-borne coatings and high solids coatings. These currently have limited applications.

Some problems with water based coatings in the auto repair business include trying to match paints when cars have been painted with solvent paints and trying to duplicate the high gloss obtained with solvent paints.

Several states are looking at evaluating spray guns. North Carolina has given several challenge grants to evaluate the HVLP spray guns. Alaska has a demonstration project to study solvent recycling that has expanded to include evaluating the use of HVLP and electrolytic spray guns.

Other technologies discussed included powder coatings. We were all familiar with the success of powder coatings in metal coating operations. There was discussion of using powder coatings on other media such as plastics and wood. There is information available on the possibility of using powder coatings on other media, but no one knew of this actually being done in industry.

There is a spray gun available (the Walberg gun) that sprays a powder coating in water slurry. This is supposedly as efficient as traditional powder coatings but not as expensive.

We also discussed the UNICARB system and had questions about the types of paints that could be used with this system. We had seen information on the use of this system in the furniture industry but no one had any first-hand knowledge of how well the system works.

Electrodeposition was discussed and we heard of a couple of case studies. It was agreed that this was a highly efficient system with only about two percent waste. There are

some limitations, including problems with coating corners or holes and only a certain thickness of coating can be obtained.

Autodeposition (we weren't sure that's what it is really called) is a new type of process being evaluated for use in the auto industry. It is similar to electrodeposition in that it is a dip process and uses water-borne coatings. It is believed that this technology is still in the developmental stage.

There was also some discussion of the importance of training, solvent reuse and recycling, and the use of pre-coated steel and aluminum raw materials.

Development of ASTM Pollution Prevention Standards

John Warren
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Before I get started on ASTM and its pollution prevention standards, I must say something about the way we share information in this field. I was struck yesterday as I attended the solvents group discussion with the serious inadequacy of our system of sharing information. There was a room of very intelligent people, and only one or two had even heard of key developments. We kept talking about the fact that something is wrong. I would submit it is the model we use—the tech transfer thing just doesn't work.

These comments lead right into ASTM. I was chairman of an Engineering Foundation conference series on Pollution Prevention in which a number of you participated. Dave Hartley, Dave Thomas, and Stephanie Richardson served on a committee and about six more of you were at the conference. I think that group represents some of the most intelligent folks, and I had never heard of the ASTM standards setting until someone called me in February and asked if I would be on the committee. Of course, I agreed, and I'm here today to let you know what's going on.

American Society for Testing and Materials: Background.

This organization was established in the early 1900s to set standards to prevent exploding industrial boilers. It builds consensus standards. Various groups and subcommittees work on a standard then submit it for balloting. Balloting works as reverse voting. However, a member who doesn't like an aspect of the standard must explain what the problem is and suggest an alternative. This system works. It minimizes political "filibustering" and promotes peer review. Using this procedure, ASTM establishes 2,000 international consensus standards per year. These standards cover:

- metals
- plastics
- petroleum products
- construction
- consumer products
- medical services and devices
- paints
- textiles
- environment
- energy

- electronics
- occupational health

Some ASTM Environmental standards include their version of the toxicity characteristic leaching procedure (TCLP), storage tank leak detection, soil and groundwater sampling, and corrective action. Often, ASTM standards are automatically incorporated into federal, state, and/or local regulations by definition. Therefore, an ASTM standard for pollution prevention could have a lot more impact in some arenas than what EPA does.

ASTM has a large committee on Environmental Assessment (Committee E-50). There are currently three subcommittees, with two subcommittees now organizing. These are (1) Pollution Prevention, Reuse, Recycling and Waste Reduction; (2) Environmental Standards; (3) Constructed Wetlands; (4) Storage Tanks; and (5) Commercial Real Estate. Of course, the committee of interest to us is the Committee on Pollution Prevention, Reuse, Recycling and Waste Reduction.

The ASTM Standard for Pollution Prevention

Although I was not present at the formation of the National Standard Setting Committee for Pollution Prevention, it seems that there is a real desire in the insurance community and other groups to have an objective way of evaluating how well a company is being run. They are looking at liability from such things as spills, accidents, and Superfund responsibility. They would like to be able to objectively determine if a company is following best industry practices.

The National Standard Setting Committee will develop standards that incorporate technical and economic feasibility and environmental and health protection. Work started in September of last year and the committee hopes to have consensus standards out shortly for review. Three sets of standards are being developed:

- Reuse Standards
- Source Reduction Standards, including
  - Modification of process, equipment, technology or procedure
  - Product reformulation or redesign
  - Raw material substitution
- Recycling Standards

I want to focus on the standards related very specifically to pollution prevention in corporate programs. I want to emphasize that many of the people working on these standards are attorneys and pollution prevention is a field that needs a lot of different perspectives.

One thing I want you to be aware of is the kinds of things the Environmental Assessment Committee is looking at for corporate environmental management systems:

- Developed by the Institute for Environmental Auditing
- Independent Auditors should be used
- Minimum proficiency is required to ensure that all knowledge and skills necessary are applied
- Scope of audit should be clearly defined:
  - * Corporate objective should be met
  - * Environmental management system should be functioning effectively
- Written report must be prepared with documented auditor quality assurance program

The idea is that an auditing team could come in from another company and use the ASTM standard to see how well the company's environmental management policy is working. There is some connection between the Total Environmental Quality Management Movement that is a very hot topic now with the Council on Environmental Quality (CEQ) and many large firms. The above are audit considerations. Below are specific considerations for determining if a facility meets a standard for pollution prevention:

- Identifies the contents of a corporate policy
- Defines how to measure performance
- Standardizes terms
- Reuse and Recycling - 3 Es: environmental impact, good engineering, and cost-effectiveness
- Source reduction
  - * Conduct facility audit and inventory of chemical use and releases.
  - * Document raw materials waste flow, environmental records, and cost of chemical and environmental compliance.
  - * Tour facility and identify source reduction possibilities.
  - * Identify, evaluate, select, implement, and monitor option(s).

These are all considerations we are familiar with. What the committee is now wrestling with is how to capture these in an ASTM format. I'd like to go through these in a bit more detail.

Corporate Policy. Examining corporate policy would be determining if an actual corporate pollution prevention policy is in effect, not determining what the policy is.

Definition of Terms. This will include terms like "waste" and "reuse" that we have been wrestling with—and that OMB is now wrestling with. The goal will be to have a guide to the facility's definition of terms. I don't know if ASTM will dictate definitions or just give suggested definitions and only require that a company explicitly define each term in writing for its own program.

Goals, Objectives and Implementation Schedule. This means stating specifically what is to be accomplished in a set amount of time. It will also include a statement of what is meant by phrases such as "reduce waste by 30 percent," including which wastes are included in the goals and objectives.

Establishment of Waste Management Baseline. Hopefully the 33/50 program will give a lot of impetus for this exercise.

Setting up a Waste Measurement and Tracking System. A lot of large companies have this already, but a lot don't. So there will be some guidance and some specifics on minimum criteria.

Development of a Priority Setting System. This is something that we have not given much thought to. What is the basis for establishing priorities? Is it risk?

EPA has been involved in this standard development. The Pollution Prevention Division is supporting development of a cost assessment document. This will actually be a cost-benefit system that will take into account more than just the avoided costs of waste management. Those costs may actually be less important than other benefits that accrue from pollution prevention. The Agency will also be providing general feedback and overall guidance on the document, particularly the economic section.

ASTM wants the Roundtable of State Pollution Prevention Programs to have input into development of these standards. When the draft is issued, it will be sent to the Board, and the Board can determine how the group should respond. The plan now is to have a draft in the early part of June and have something for consensus ballot in late summer. It is my understanding that the time for Roundtable input is June.

COMMENTS IN RESPONSE TO QUESTIONS

My understanding of what is driving this ASTM standard development is that there will be no national EPA pollution prevention standard, such as there are in regulatory areas, and that it would be very good and useful for companies and insurers to have some way of evaluating companies' progress in pollution prevention.

I don't believe there's a hidden agenda in the development of this standard. I do think there is a concern that pollution prevention is different from state to state. And, it seems that there is a desire to see a set of criteria by which companies can measure their own success and by which companies and government agencies can measure the pollution prevention commitment of firms they do business with, such as their suppliers.

One of the issues is going to be what constitutes a "corporate plan," since some companies are very centralized and some, very decentralized.

FINANCING OF POLLUTION PREVENTION FROM MEDIA GRANT FUNDING SOURCES

Stephanie Richardson
and Bob Style
Discussion Leaders

The following discussion was the result of a request for an "official" Roundtable response to alternative approaches to federal funding of pollution prevention using traditional single medium grants.

Block Grants

Since pollution prevention activities started as non-regulatory, there was concern expressed about breaking into the regulatory arena. Concern was raised about whether block grants could go to anything but a regulatory agency. Questions raised included:

- could mechanisms be established to fund anything but a regulatory agency?
- could mechanisms be set up to fund universities and/or small business centers?
- would there be an advantage to mix the regulatory funding into the non-regulatory arena or would this create an appearance or perception problem?
- would this result in single media approaches to pollution prevention in conjunction with the single medium regulatory approaches thus quenching the push toward multimedia, total mind set change approaches?

Groundwater was cited as an example of how the Block Grants could be used. Groundwater programs were initially broken out from water quality programs then slowly folded back in. Members felt EPA would have to make a decision on this and then mandate it.

Set Asides

Set asides were met with mixed reaction. Concerns here included:

- for a 2% set aside, would this result in regulators only thinking pollution prevention 2% and regulatory approaches 98%, (i.e. sending the message that pollution prevention approaches are not as important)?
- would this cause resentment among the ranks as regulators see part of their funding sources being diverted elsewhere?

- would there be appropriate bean counting flexibility such as counting pollution prevention activities as beans or reducing the number of beans required?

There was fear expressed as to the possibility of "payback" from the single media regulatory programs.

Other Approaches

The following are other ideas and approaches that were presented.

- MATCHING MONIES PROGRAMS. This would involve leveraging monies from public sources with private industry providing a match. The more private industry dollars obtained would mean the more public monies would be available.

- REVOLVING LOAN PROGRAMS. These do require initial seed money. This seemed very interesting on the local level.

- FLEXIBILITY IN GRANT REPORTING REQUIREMENTS. This seemed to be a popular approach. It would involve changing the traditional outputs on numbers, types and time lines required for reporting, and modifying the standards by which thing are evaluated.

- CLEAN AIR ACT SMALL BUSINESS ASSISTANCE. Assistance provided through the CAA should be required to be multimedia. Further, EPA should require assistance provided by this resource to be coordinated with any pollution prevention program technical assistance efforts.

- SHOWCASE POLLUTION PREVENTION. Pollution Prevention could be more easily institutionalized if media specific grants were used to FUND SPECIFIC PROJECTS that "showcased" pollution prevention.

- TRAIN AGENCY STAFF. EPA could dedicate money for training agency staff to allow for better understanding and remove fears that the single media program managers may have. Educate single media agency managers that Pollution Prevention is a tool or resource.

- INFORMATION TRANSFER. SYSTEMATICALLY explore and disseminate information on what is being done at both the federal and state levels to allow for FLEXIBILITY in existing grant programs. Provide information on what is being done and how it was achieved - how it can be transferred to other states or agencies.

- SET-ASIDES: Perhaps EPA could start with a 2% set-aside for Pollution Prevention and over 10 years gradually increase the amounts until 98% is for pollution prevention and 2% is for command and control.

A LONG TERM POLICY CHANGE SEEMS TO BE THE APPROACH WHICH IS NEEDED. Without a long term Agency policy shift, the same battles will continue to be fought year after year.

SMALL BUSINESS ASSISTANCE PROGRAMS seem to be an avenue which the regulators are receptive to as far as giving up money. If the small business assistance works for air then why not other media as well?

For NEW MONEY sources such as stormwater and the clean air funds, flexibility should be built in which will more easily allow for personnel and funds to be used for pollution prevention activities.

If EPA really believes in Pollution Prevention, the agency should demonstrate it by putting as much money into prevention/reduction activities and grants as it does into command-and-control programs. There is an obvious disparity in funding levels which should not only be recognized but also corrected.

IT IS TIME TO ARTICULATE TO THE REGULATORS AND AGENCY PERSONNEL WHAT IT MEANS TO PUT MONEY INTO POLLUTION PREVENTION - TO EXPLAIN THE DIFFERENCE BETWEEN FRAMING THE FUTURE IN A PREVENTION ATTITUDE VS. A REGULATORY ATTITUDE. THE NATIONAL ROUNDTABLE SHOULD ACT AS ADVISORS ON HOW POLLUTION PREVENTION MONEY IS BEING SPENT.

In Conclusion:

It seems that we are taking a preventive attitude toward our personal health and that federal moneys are now being spent on preventive programs for personal health.

ISN'T THE SAME LOGIC AND APPROACH APPLICABLE FOR THE HEALTH OF OUR ENVIRONMENT?

NATIONAL ROUNDTABLE
OF STATE POLLUTION PREVENTION PROGRAMS
SPRING 1992 CONFERENCE - APRIL 22-24, 1992

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